ARCHAEOLOGICAL INVESTIGATIONS AT CA-SHA-2611/H, THE MOCCASIN CREEK SITE

Elaine Sundahl
Shasta College Archaeology Lab

1999

Report prepared for the Bureau of Land Management and the Bureau of Reclamation, Redding, California

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In Completion of Assistance Agreement B300-A8-1002, Task Order #1

Acknowledgements

This document reports the continuation during 1997 and 1998 of the West Redding Archaeological Project, a Cooperative Management Agreement between the Bureau of Land Management (BLM) and the Shasta College Field Archaeology program. This project has been accomplished through the efforts of Dr. Eric Ritter, Archaeologist for the Redding Area office of BLM, Ed Clewett, Archaeology Instructor at Shasta College, and numerous students and volunteers of the Shasta College field program. It was supported by the Social Science Division of Shasta College and the Bureau of Reclamation with special mention of Dr. Michel Small of the former institution and Dr. James West and John Farmwald of the latter agency.

Field investigations at the Moccasin Creek Site were conducted between February 15 and May 30, 1997, and January 17 and May 16, 1998. Class members and other volunteers included Joyce Abbott, Colleen Benson, Greg Bosworth, John Brooks, Jack Carey, James Carey, Pricilla Carey, Aron Cavette, Kenneth Dorney, Carrie Engell, Charles Engell, Joseph Fitzpatrick, Ronald Haddock, Julie Haynes, Patrick Heiman, Donna Imhoff, Angela Jones, Carol Kefalas, Peter Loetterle, Mitch Metheny, Tricia Moehle, Winfield Mowder, Darrell Mullins, E. Potter, David Pratt, John Pratt, Steve Puderbaugh, Helaine Rampley, Bret Ritter, Adam Schmidt, T. Scott, Patricia Simmerly, Charlmayne Smith, Elaine Sundahl, Leandra Swanner, Linda Swanner, and Leanna Wacher. Eric Ritter served as BLM representative during both spring semesters, and BLM employees James Barnes, Ryan Bryson and Dave Nelson participated during the final days.

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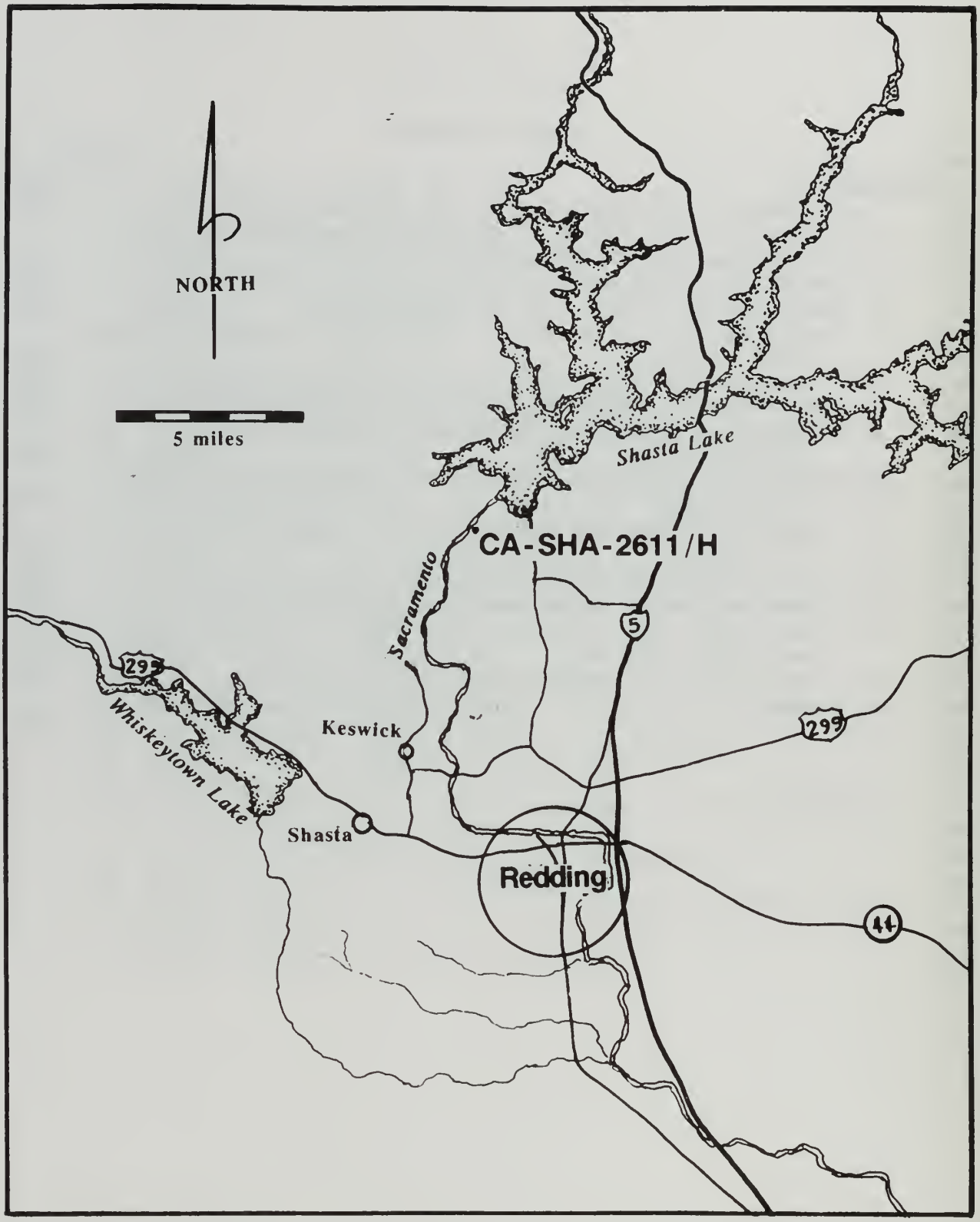

Figure 1. The location of CA-SHA-2611/H.

INTRODUCTION

Moccasin Creek (CA-SHA-2611/H), although small, is a complex and interesting site. The initial intention of the archaeological investigation was to focus on the prehistoric cultural deposit, but the historic components were found to be more extensive and diverse than originally believed. Similarly, the prehistoric deposit was discovered to consist of multiple components with the oldest the most heavily represented.

The Moccasin Creek site is located on the west bank of the Sacramento River approximately eight miles north of Redding and one mile below Shasta Dam (Figure 1) on Bureau of Reclamation (BOR) land for which the Bureau of Land Management (BLM) acts as the field management agency. The site consists of two loci located on matching terraces separated by the mouth of Moccasin Creek. Relatively small in size by valley midden standards, the site has been badly vandalized by illicit digging with a small percentage of the deposit completely removed. Besides the large vandal pit, the cultural deposit in the southern locus may have been bulldozed such that an unknown thickness of the surface soil has been pushed over the edge of the bank, exposing older levels. In addition to illicit digging, the site is subject to ongoing impacts from offroad vehicles.

Because of the extensive disturbance to the prehistoric deposit and resulting loss of information on the site's history, BLM made this site a priority for investigation through the Shasta College field archaeology program under a Cooperative Management Agreement. Shasta College, in return, was provided a site for use in training students in archaeological field methods during the regular Field Archaeology Class under the direction of S. Edward Clewett.

The major field objective for the project was to provide data which would enable BLM and BOR to determine the significance of the cultural deposit and its eligibility for the National Register of Historic Places. Under the agreement, Shasta College provided student labor, equipment, artifact processing and curation, and a report of the investigations. BLM provided Native American consultation for the project, coordination with BOR authorities at Shasta Dam who control access, funding for auxiliary studies and report, and field support such as transportation and supplies.

Moccasin Creek provided a surprising amount of valuable data which, combined with information gained through other West Redding Archaeological Project investigations, will contribute to a better understanding of northern Sacramento Valley prehistory.

Natural History

CA-SHA-2611/H consists of two small loci located where Moccasin Creek enters the Sacramento River. Deeply incised into the bedrock some five meters and more below the level of the cultural deposit, the intermittent Moccasin Creek runs into the river some 15m west and 12m in elevation below the site.

Although situated at 600 feet in elevation, the site is surrounded by the steep topography of the Klamath Mountains geologic province with nearby peaks rising to 2000 feet and above. The underlying geologic formation is the Copely Greenstone, a Devonian and pre-Devonian aged metavolcanic formation (Strand 1962). Surface soils are a sandy loam primarily stemming from the river-deposited terrace formation, underlain by heavy clays derived from the resident bedrock.

The southern locus of the site is predominantly open with a thin cover of grass and star thistle. A few small California black oak and live oak trees, manzanita, toyon, poison oak, yerba santa and other shrubs grow on the edge of the cultural deposit. The northern locus contains some grassy openings, but portions are more heavily vegetated with manzanita and oak. Moccasin Creek through the site is lined with a riparian vegetation thick with oak, willow, alder, squaw bush, grape vines, and blackberries.

The moderately steep terrace slope which drops to the Sacramento River is largely open and grass-covered. The river itself is heavily lined with willow, ponderosa pine, black oak, and vines. The surrounding slopes are densely covered with manzanita, ceanothis, and other chaparral with stands of California black oak and a few canyon oak and ponderosa pine.

The vegetation may have been quite different just 100 years ago, prior to the opening of the copper smelter almost directly across the river at Coram which destroyed much of the native vegetation. Vegetation resulting from historic activity includes a thick growth of oleander along Moccasin Creek and numerous Acacia trees on the river bank just west and north of Locus B. No fruit trees grow on or near the site.

The mean annual precipitation for the site area is between 55 and 60 inches (California Department of Resources map of Mean Seasonal Precipitation chart). Animals to be expected in the area include black-tailed deer, brown bear, mountain lion, coyotes and other medium sized mammals and many small mammals. Prior to the 1940's construction of Shasta Lake, heavy anadromous fish runs passed by the site several times each year. Moccasin Creek at present is a spawning stream for trout.

Cultural History

The Sacramento River has for thousands of years been a busy corridor of human activity, its wealth of resources attracting use and occupation. The river north of Redding was attributed ethnographically to the Wintu, and specifically to the 'elpom' (shore-place) subarea which lay between Keswick and Kennett (Bauman 1981:83), the latter about two miles above Shasta Dam. Cora DuBois describes 'elpom' as "an area somewhat south of Kennett on the Sacramento chiefly along the west bank southward almost to Redding. . . . The Wintu camps used to cluster about the present station of Coram [across the river from Moccasin Creek], and in summer hunting camps were established to the west in the mountains." (DuBois 1935:7).

A list of Wintu villages based on information collected in the 1880's includes norgeril (south village), located on the Sacramento River west of Churntown (Guilford-Kardell and Dotta 1980:45) which would place it near Motion Creek, 1 1/2 or 2 miles south of Moccasin Creek. There is no record of a village at the Moccasin Creek site, but the Wintu name tcikteptci kalay is given to a place on the east bank of the river just opposite Coram in the general area of Moccasin Creek, which reportedly was an important salmon fishing area but not inhabited (Bauman 1981:83). Numerous other Wintu placenames for riffles and flats along the river and mountain peaks and passes (Bauman 1981:83-86) show an intimate familiarity with the area. Although most names are not translated, those that are indicate a predominant interest in the river and in acorns. As these placenames were collected by J. P. Harrington in the early 1930's, long after the initial disruption of native life, much information may have been lost.

The Wintu practiced a subsistence economy heavily based on fishing for anadromous fish, hunting for deer, and collecting and processing of acorns (DuBois 1935). Major villages in the Redding area are believed to have been occupied on a permanent year-round basis with small task groups venturing out to obtain exotic supplies not immediately available. Trade with neighboring groups also kept the residents supplied with their needs.

Linguistic studies have led to the hypothesis that the Wintu tenancy of this part of northern California is no more than 1000 to 1400 years (Whistler 1977; Levy 1996), although their original homeland and direction of migration is still under investigation. The Wintu are part of the greater Penutian linguistic stock which is located in central and northern California as well as western Oregon, Washington and Idaho.

Although it is unknown what cultural group occupied the Redding area prior to the arrival of the Wintu, it is generally assumed that they spoke a language or languages of the Hokan linguistic stock (e.g. Moratto 1984:530-559). The Okwanuchu, a

small ethnographic group linguistically affiliated with the Hokan-speaking Shasta, occupied the upper Sacramento River at historic contact (Kroeber 1976, Silver 1978) and their ancestors are projected as occupying the Moccasin Creek area some thousands of years ago. Little is known of this small group which became culturally extinct prior to the beginning of the 20th century.

The earliest Euro-Americans to enter Shasta County were the fur trappers. Alexander McLeod, a Hudson's Bay trapper, in 1829 followed the Sacramento River southward through the county, thus showing that the route was passable and that it was a potential fur-producing area (Petersen 1965:13). Others followed until the days of the "mountain men" began to wane in the 1840's.

Some of the parties of trappers and explorers brought with them a disease, believed to be malaria, which was contracted by the Native inhabitants with disastrous results. It has been estimated that as much as 75% of the Sacramento Valley aboriginal population died from this disease (LaPena 1978:325), although its effects on the Indians of Shasta County is not known.

The 1848 discovery of gold on Clear Creek by Major Pierson B. Reading, Shasta County's first permanent Euro-American settler, brought a large influx of gold seekers into the area, and numerous boom-towns sprang up overnight. Some intermittent placer mining took place in the auriferous gravels of the upper Sacramento River beginning about 1850 but it was not particularly productive. Although the major gold fields lay to the west, permanent settlement began in areas previously the domain of the Native Americans (Petersen 1965:16, 22).

Copper mining became a much more important industry than gold mining in the immediate Shasta Dam area with the main copper mining activity taking place between 1896 and 1910. Most of the copper came from two districts, East Shasta and West Shasta.

The West Shasta District was associated with the Balaklala Rhyolite Formation and included the Balaklala, Early Bird, Mammoth, and Shasta King mines. Copper smelters were built and operated at Keswick, Coram, and Mammoth Mines (Lydon and O'Brien 1974:17, 29, 33-40). Kennett, established in 1884 as a railroad town, later became a copper mining boom-town with a population of 5000. Coram, established in 1906 by the Balaklala Mine, was home to about 500 people and contained 23 saloons, 12 rooming houses, three hotels, three grocery stones, and a hospital (Smith 1991:38, 87). By 1920 Kennett and Coram were ghost towns. An increase in the zinc content along with increasing costs of operations, lower prices for copper, and suits for damage caused by the toxic smelter fumes combined to make copper smelting unprofitable in Shasta County, and all smelters were closed (Lydon and O'Brien 1974:29).

The Government Land Office plats housed at the Redding Office of BLM document that portions of the northwest one-quarter of Section 21, T33N, R5W, which contain the site, were part of a mining entry patented in 1906. The remainder of the section was granted to the Central Pacific Railroad. The 1901 Redding Quadrangle shows a structure in the vicinity of Locus B, but its exact location is not ascertainable since the map differs from current maps. The 1912 Shasta County Map indicates that the northwest one-quarter of Section 12 was owned by the Balaklala Mining Company, but it does not show any structure or other developments.

The construction of Shasta Dam, beginning in 1938, brought a new prosperity to the Redding area which had been somewhat depressed since the end of the mining era nearly two decades earlier (Petersen 1965:45-46). This project, however, destroyed or made inaccessible much of the historic remains to archaeological investigation. Kennett lies deep within Shasta Lake and Coram became the terminus for the conveyor belt which transported sand and gravel from Redding used in mixing cement.

Moccasin Creek lies among three areas in which prehistoric archaeology has been investigated: sites on the river terraces in Redding some eight miles to the south, sites in the foothills west and northwest of Redding, and a group of four sites adjoining the Sacramento River from LaMoine to Pollard Flat, lying 20 miles to the north.

Numerous prehistoric sites have been excavated on the broad river terraces in the Redding area, predominantly classed as late period Wintu sites (e.g. Treganza and Heicksen 1960; Woolfenden 1970; Foster 1982; Sundahl 1982; Vaughan 1992). The archaeological assemblage attributed to the Wintu is termed the Shasta Complex (Meighan 1955) or the Redding Aspect of the Augustine Pattern (Bennyhoff 1994:73) and has been well-described for the area. It consists of Gunther Series and Desert Side-Notched points, obsidian and chert drills, hopper-basket mortars and pestles, arrow-shaft smoothers, numerous bone tools, pinenut beads, and shell ornaments and beads as well as numerous non-diagnostic flake and cobble tools. Features include remnants of burned houses, usually about 3m in diameter, baking ovens, and firepits. Radiocarbon dates are within the past 1000 years and obsidian hydration values on Tuscan obsidian are 2.0 microns or less.

North of Redding, the topography becomes much steeper and river terraces few and very small. Although the inventory of excavated prehistoric sites between Redding and Shasta Dam does not include any which adjoin the Sacramento River, several sites lie a short distance away. The Fay Hill Site (Farber and Neuenschwander 1984), the two Quartz Hill sites (Sundahl 1996), and the Flat Creek site (Dryer and Kowta n.d.) all lie three to

five miles south of Moccasin Creek and are within one-half mile of the river. All contained deposits attributed to the Wintu, and two of the four contained evidence of a pre-Wintu occupation.

Several sites in the Whiskeytown Lake/Olney Creek area west of Redding combine evidence of the Wintu with substantial pre-Wintu occupations (Baker 1990; Tyree 1992; Sundahl 1998). The archaeological assemblage which precedes the Shasta Complex consists of a series of side- and corner-notched points termed the Clikapudi Series which range in size from fairly small to large, mortars and pestles, manos and millingstones, and notched pebble net-weights believed to have been used in fishing. This assemblage is variously dated between 1000 to 3000 years and 2000 to 4000 years. One radiocarbon date of 1750 B.P.was obtained on the Middle Mule Pond site (Tyree 1992), and obsidian hydration values on Tuscan obsidian average 2.33 microns and the mean for Grasshopper Flat obsidian is 3.36 microns (Sundahl 1998:58). The term Whiskeytown Aspect of the Mendocino Pattern was proposed for the Whiskeytown area by Sundahl (1998).

Excavations at four sites in the upper Sacramento River canyon led to the development of a three-part chronology covering more than 5000 years of prehistory (Basgall and Hildebrandt 1989). Oldest in the sequence is the Pollard Flat Phase, dated 5300 to 2700 B.P. based on radiocarbon dates between 5080 B.P. and 3330 B.P. and obsidian hydration values in the range of 4.0 to 6.1 microns on GF/LIW obsidian. Diagnostic artifacts are Squaw Creek Contracting Stem points, McKee Unifaces, manos, millingstones, numerous cobble spalls and incised stone artifacts. The Vollmers Phase is characterized by Clikapudi side-notched and corner-notched points, manos and millingstones, notched stone net weights, core and cobble tools, an emphasis on non-obsidian materials, and large hearth or roasting oven features. This phase is dated between 4500 and 1700 B.P. with radiocarbon dates of 3460 B.P. and 2160 B.P. and hydration values of 3.0 to 5.5 microns on GF/LIW obsidian. Latest in the sequence and dated within the past 1900 years is the Mosquito Creek phase represented by Gunther points and obsidian hydration values of less than 3.2 microns. This phase is minimally represented in the project area.

It was concluded that the subsistence orientation during the Pollard flat phase was "forager-like" in contrast to the succeeding Vollmers Phase which is seen as representing a "fission-fusion" strategy. The Mosquito Creek materials are believed to represent short-term, seasonal occupations which continue the fission-fusion pattern. The long temporal overlap between the first two components is viewed as representing alternating use of the canyon by two groups of people who practiced different life styles, suggesting that these competing lifeways coexisted for more than 1000 years (Basgall and Hildebrandt 1989:432-433, 445-451).

Research Objectives

The small terrace on which the site is located lies well above the river level and probably has not been subjected to flooding for many thousands of years. Surface finds suggested that the cultural deposit would represent thousands of years of use by people who hunted, fished, and collected other resources in the area. The research objective was to investigate the cultural remnants to determine the presence or absence of elements which could lead to an understanding of the site's cultural history and which would make it eligible for inclusion on the National Register of Historic Places.

Research questions which guided the investigations included the following:

1) What elements are present that will provide knowledge of the site's chronology? What date or dates was the site occupied? If multiple components can be verified, what is the time frame for each? Were the uses of the northern and southern loci contemporary throughout?

2) What function or functions did the site serve? Are there remains of prehistoric structures or other habitation evidence? Were river resources the primary economic interest, or was hunting or other resource collecting of equal or greater attraction? Are elements of subsistence patterns present, such as mussel shells, faunal remains, macro-floral remains, micro-botanical materials, which can yield answers to these questions? How do these quantify, and how do the two loci compare to each other and to remains from other riverine and non-riverine sites in the area?

3) What social patterns are evident in the cultural deposit? Did the inhabitants occupy the site permanently or seasonally, with other parts of the year spent elsewhere? In what direction or directions did their cultural allegiance lie? Did their obsidian come from the Medicine Lake Highlands to the northeast or from the Tuscan source to the east or both? Are incised stone present and, if so, how do they compare to the large collection described in the upper Sacramento River canyon some 20 air miles to the north? Are shell beads present that would indicate trade to the south (eg. clam shell disk beads) or to the northwest (*Olivella*, *Dentalia*). Are any other stylistically distinct artifacts present that suggest close association with some groups more than others?

Field objectives during the 1997 season were to excavate a systematic series of one-meter square units to the base of the midden in both loci to determine what cultural elements are present. The 1998 objectives were to increase the sample concentrating in that part of the site where the most features and artifacts were found during the original excavations.

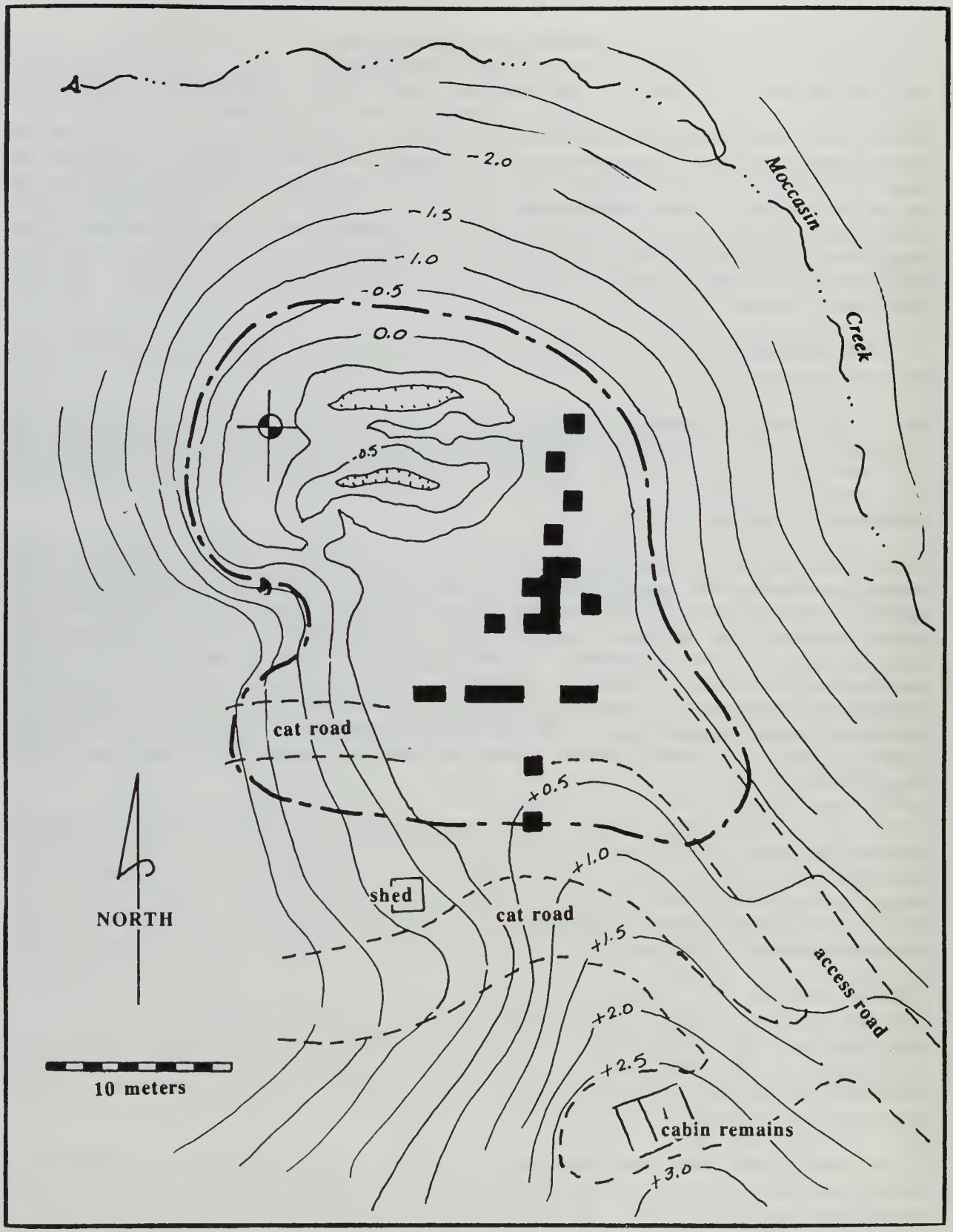

Figure 2. Locus A of CA-Sha-2611/H showing excavation units; contours in 0.5 meter intervals.

Site Description

The Moccasin Creek site consists of two loci, Locus A on the south and Locus B on the north side of the point where Moccasin Creek enters the Sacramento River. The two loci are separated by about 32m. Locus A contains the larger and more dense cultural deposit, but is also the more extensively disturbed by recent activities. Both contain prehistoric and historic deposits.

Locus A

The prehistoric deposit in Locus A measures approximately 30m in diameter. It contains a large depression measuring about 12m by 10m (Figure 2) and up to one meter in depth, presumably excavated in illicit artifact collecting or to obtain soil, which has destroyed as much as 25% of the cultural deposit. The depression sidewalls reveal a widespread, thin light grey clay stratum at a depth of 23-to-28cm. Numerous water-smoothed stones, cobble-size and larger, are visible within the depression.

The Locus is accessible by a dirt road, which terminates at the southern edge of the prehistoric deposit. The road, which drops down to the site from the ridge above, has resulted in an erosional deposition of what appears to be culturally sterile soil over the southeastern portion of the site, possibly providing some protection against illicit digging. Initial surface collections on the prehistoric deposit recovered several notched points and McKee Unifaces, manos, millingstones, and basalt cobble spalls, suggesting that the site was pre-Shasta Complex in age. Subsequently, however, a Gunther Series point, a pestle fragment, and hopper mortar were all found on the western slopes, and it is possible that bulldozer activity removed the highest cultural levels, pushing them over the slope and leaving a flat surface on most of the site.

Remains of a collapsed cabin and a standing shed or outhouse are located on the southern end of the site, slightly upslope and outside of the prehistoric deposit, adding some 20m to the site length. The cabin remains, located on a large flattened area partially outlined by large rocks, are wood with large beams embedded in the soil marking a structure size 10 1/2 feet east to west by 8 1/2 feet north to south. Some floor boards are still in place. Several large pieces of corrugated tin may have served as roofing material. Only wire nails were found in association. The shed or outhouse measures 5 feet square, 6 feet high on the south side containing the door; the corrugated-tin roof slants downward to meet a 5 foot high wall on the northern side. Other historic artifacts include a bed frame, glass fragments, ironstone sherds, a Grizzly rifle plate, and a tricycle. It is estimated that the cabin dates to the 1930's or 1940's and possibly was used for habitation while Shasta Dam was being built.

TABLE 1

Summary of Excavated Units at CA-SHA-2611/H
By Location, Depth, and Screen Size

UNIT	DEPTH ACHIEVED	SCREEN SIZE
LOCUS A		
N0-E16	50cm	1/4"
S1-E15	60cm	1/8"
S3-E16	70cm	1/4"
S5-E15	90cm	1/4"
S7-E15	70cm	1/4"
S7-E16	60cm	1/8"
S8-E14	70cm with 1/4 to 80cm	1/4"
S8-E15	70cm	1/4"
S9-E15	60cm with 1/2 to 70cm	1/4"
S9-E17	60cm	1/4"
S10-E12	90cm with 1/2 to 100cm	1/4"
S10-E14	50cm with 1/2 to 60cm	1/4"
S10-E15	50cm	1/8"
S14-E8	130cm	1/4"
S14-E9	120cm	1/4"
S14-E11	100cm	1/4"
S14-E12	90cm	1/4"
S14-E13	90cm	1/4"
S14-E16	60cm	1/4"
S14-E17	60cm with 1/2 to 70cm	1/4"
S18-E14	10cm with 1/4 to 40cm	1/4"
S21-E14	10cm with 1/4 to 40cm	1/4"
LOCUS B		
Unit B-1	130cm	1/4"
Unit B-2	120cm	1/4"
Unit B-3	70cm	1/4"

Even earlier historic use of the area is indicated by the presence of a ditch which originated about 1/2 mile upstream on Moccasin Creek and contoured around the southwestern slopes of the creek. The ditch is still visible throughout most of its course, but it no longer exists at the site, having been erased in part by the road and possibly the cabin construction. It is unknown whether the ditch crossed the site or followed the slope around its eastern edge. The ditch does not appear on the 1882 Government Land Office map.

A mapping datum was established on the northwest corner of Locus A and baselines run eastward and southward for unit location, using true cardinal directions. Twenty-two 1m square units were excavated in Locus A (Table 1). Three units were excavated using 1/8-inch mesh screens and the remainder through 1/4 inch.

The depth of midden in Locus A varies from 50cm or 60cm on the eastern side to 120cm on the west with the underlying metavolcanic bedrock dipping steeply in the same direction. The midden depth, however, may in part be due to leveling of the locus by a bulldozer.

A stratigraphic sidewall profile, prepared by Dr. Eric Ritter, contributed to the description below (also see Figure 3). Many of the units contained a surface overburden of a yellowish-brown (10YR 5/4) loam, varying in thickness from 5cm in the southeastern portion of the site becoming thinner to the north and west, and disappearing entirely at the northern and western edges of the locus. This overburden is believed due to erosion from the road constructing into the site in the late 1930's or 1940's or by bulldozer activity. This stratum was underlain in several units by a thin, 2cm-5cm layer of light grey sediment, irregularly distributed across the locus. First thought to be ash, it was later discovered to be clay, probably resulting from an historic mining activity, further described below.

The cultural midden, which varied from 40cm to over 1m in thickness, was a very dark greyish-brown (10YR 3/2, dry) sandy loam with a pH of 5.7, granular, soft, non-plastic and non-sticky, with less than 5% pebbles. Beneath this in most units lay a clay loam, at its upper boundary mixed with midden but becoming increasingly clay-like and sterile of cultural materials. This layer was dark yellowish-brown (10YR 4/6, dry), crumb, sticky, and plastic. In some places the clay was thin, immediately overlying the bedrock; in others it was much thicker and the unit not excavated to bedrock.

Samples of the overburden, midden, and underlying clay loam along with two samples from Locus B and an offsite sample were submitted to the Soils and Physical Geography Laboratory at the University of Wisconsin-Milwaukee for particle and chemical analyses. Results are presented as Table 2.

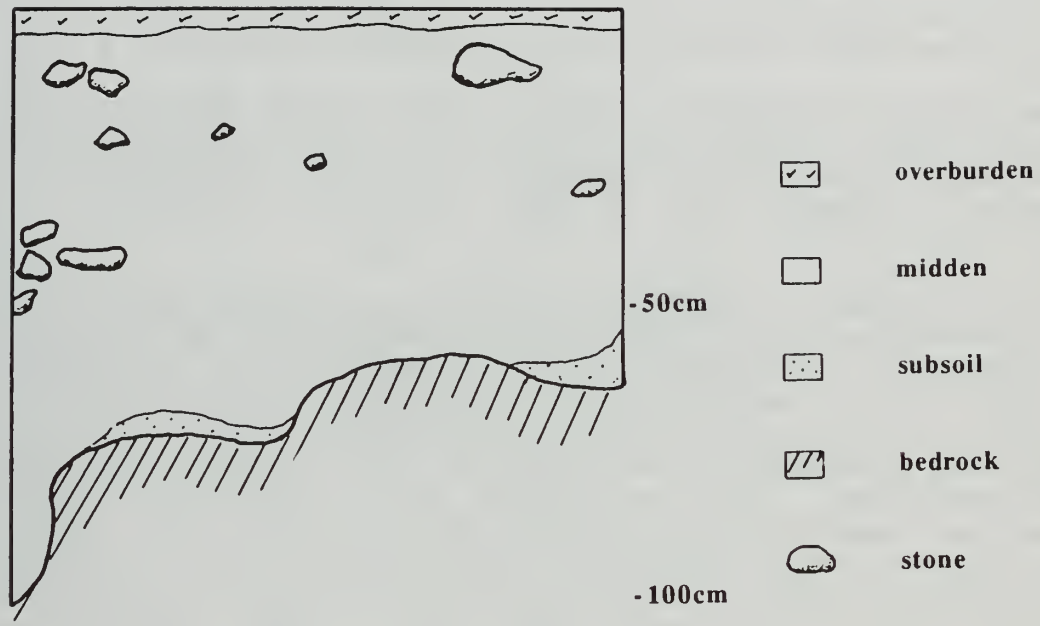

Figure 3. North sidewall profile of S5-E15.

TABLE 2

Particle Size and Soil Chemistry Analyses
On Six Samples from CA-SHA-2611/H

SAMPLE PROVENIENCE	% SAND	% SILT	% CLAY	TOTAL P mg/kg	pH	EXCH MG mg/kg
S10-E14/0-5cm	45	45	10	962	4.8	281
S10-E14/35-45cm	73	19	8	1347	5.7	290
S10-E14/50-60cm	34	34	32	643	6.0	441
Unit B-3/15-20cm	50	35	15	809	5.7	386
Unit B-3/60-70cm	40	35	25	655	6.0	641
Offsite, 25m south	39	46	15	885	5.8	276

Units S18-E14 and S21-E14 were placed at the southern edge of the flattened area of Locus A in hopes of uncovering a less disturbed prehistoric stratum. It was a surprise, therefore, to find that beneath the overburden was a deposit of numerous thin layers of light grey clay totaling more than 40cm in thickness. Shovel tests were extended outward from these units, revealing that apparently a small reservoir had been excavated to capture clay sediments. An irregular oval in shape, it measures about 11m west to east, extending from the E-12 line to E-23 in the center of the access road, and 5m to 6m north to south, from about S-16.5 to S-23.

A sample of the clay was analyzed at the Shasta Geochemistry Laboratory in Redding for several minerals. Results are shown in Table 3. The feature is believed to be a sediment-settling pond for residues from gold mining, possibly an arrastra or small stamp mill. No other evidence was found on the site to indicate such activity.

TABLE 3

Analysis of Minerals in Clay Sample from Locus A
expressed in parts per million or parts per billion

CYANIDE PPM	ARSENIC PPM	MERCURY PPB	LEAD PPM	ZINC PPM
2.5	-	107	8.5	99.2

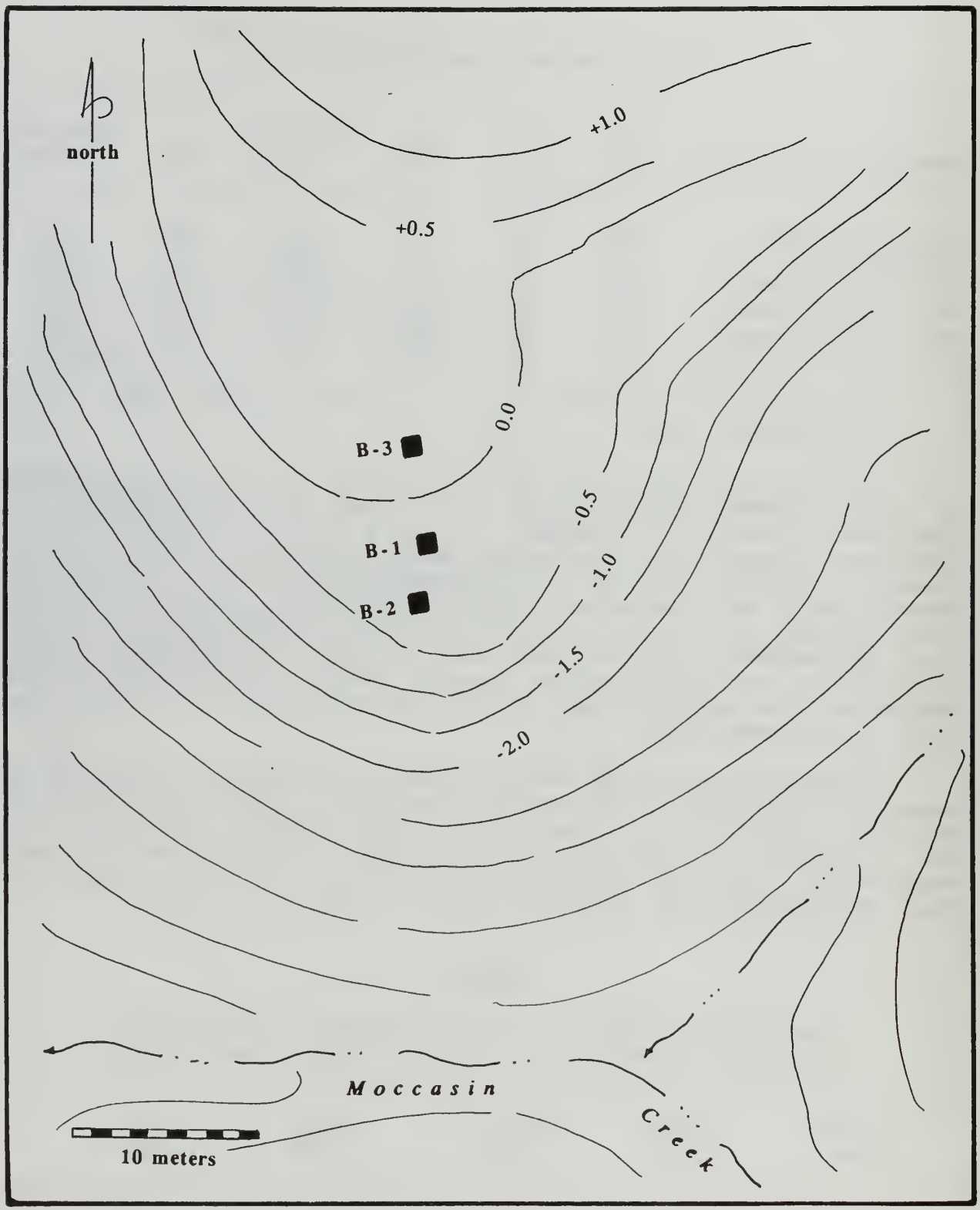

Figure 4. Location of excavation units in Locus B; contours in 0.5 meter intervals.

Locus B

The prehistoric deposit at Locus B on the north side of Moccasin Creek measures about 30m in diameter. It supports occasional small grass-covered openings intermixed with manzanita and small oaks. At present this locus has no road access and appears far less disturbed than Locus A. The surface topography is more rounded in appearance and apparently did not suffer the extensive alterations that flattened Locus A.

In addition to a number of obsidian and metavolcanic flakes, two hopper mortars were found on the surface. These were measured and are described in a later section but were not collected. Both were located in the approximate location of unit B-3.

Also found on the surface near the western margin of the site were fragments of two ironstone plates bearing the hallmark, "Thomas Hughes Burslem 73" on the back. The presence of an historic component was confirmed by the recovery of glass fragments, common cut nails, a metal button and other historic artifacts during the excavations. These were primarily limited to the top 20cm of the cultural deposit.

Three 1m square units were excavated in Locus B (Figure 4) to the bottom of the midden. Soils from all three units were sifted through 1/4-inch mesh screens. Unit locations were determined in part by openings in the vegetation.

The midden depth sloped from 70cm in Unit B-3, farthest north, to 110cm in B-2 on the south. Unit B-1 had a depth of 130cm, but this represents a pit dug into the decomposing bedrock for a fire pit feature.

The highest levels exhibited a crumb structure, with a soft, fine loam consistency, brown (10YR 5/3, dry) in color. Cobble-sized rock comprised about 20% to 25% of the midden volume, but less than 1% was gravel. By a depth of 80cm in B-1, the soil had become yellowish-brown (10YR 5/6, dry) in color, the midden intermixed with the underlying clay layer. Results of the analysis of the soil texture and chemistry for the midden and clay strata are given in Table 2.

Bedrock was encountered at a depth of 90cm in the east side of Unit B-1 but sloped downward to the west. Both units B-1 and B-3 contained large quantities of fire-affected rock and charcoal in the lowest levels with a very dark greyish-brown matrix (10YR 3/2, dry). The concentration of fire-affected rock and charcoal in B-1 was recorded as Feature 3 (Figure 5).

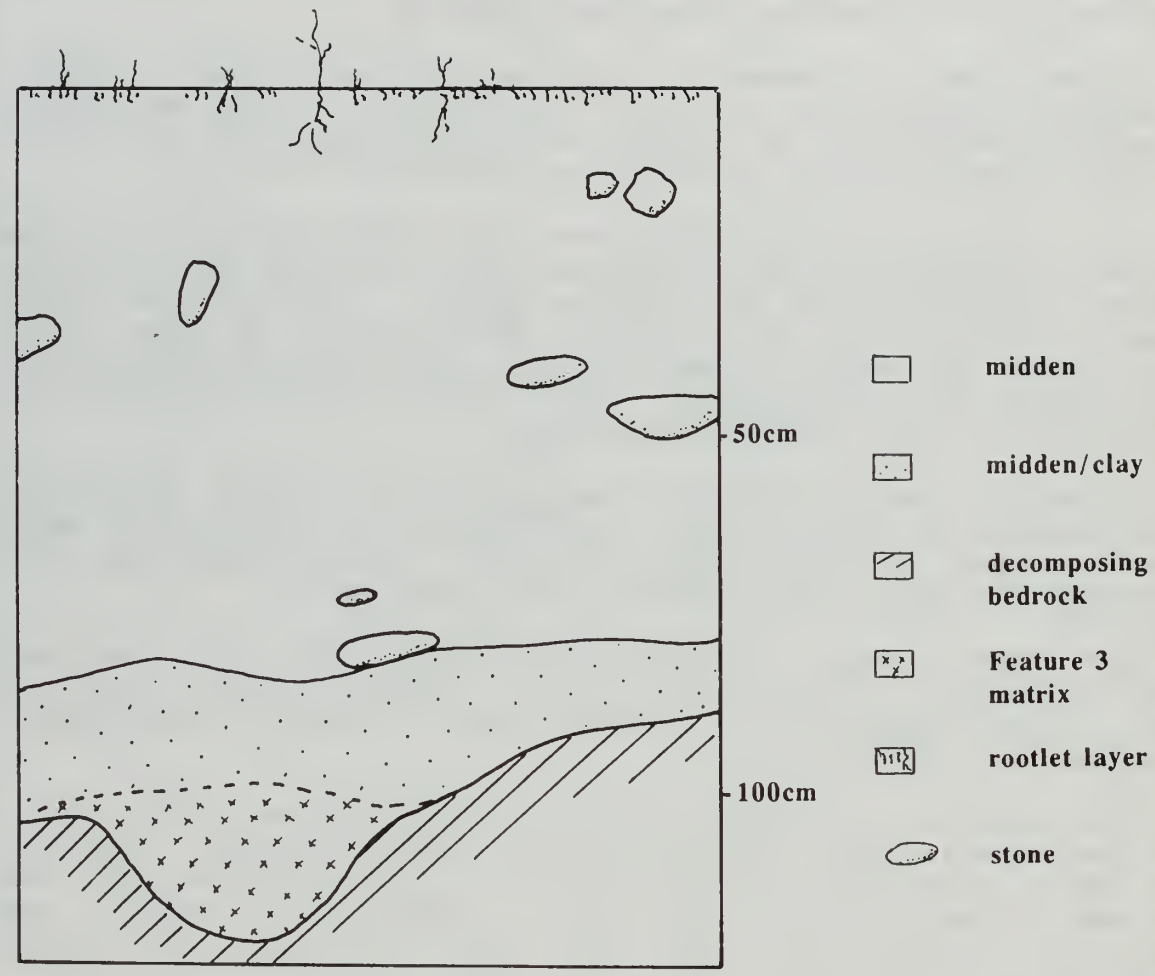

Figure 5. Profile of the north sidewall in Unit B-1 showing Feature 3 at the base.

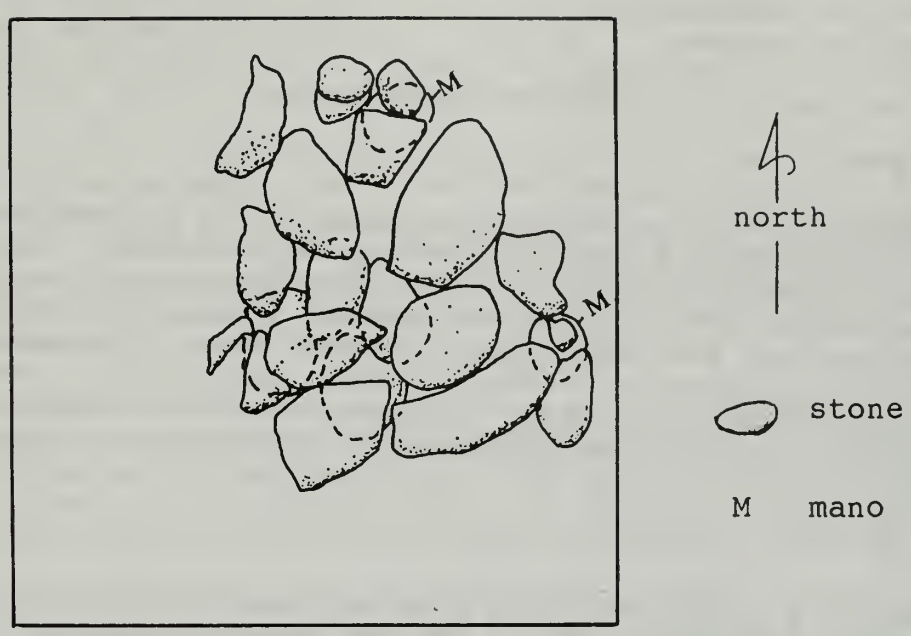

Figure 6. Plan view of Feature 1.

Features

Five features were recorded, four in Locus A and one in Locus B. These are individually described below.

Feature 1

A circular configuration of large rocks measuring about 70cm by 60cm was located at the 30-40cm level of S9-E15. Largely open in the center, it contained one large, smoke-stained rock. A smaller set of rocks lay in the 40-50cm level, immediately below the upper set. No charcoal was associated with the feature. Two manos in the 40-50cm level may have been associated (Figure 6).

Feature 2

A cache of four very well-made stone tools was found in an area measuring 25cm by 15cm at the 50-60cm level of S1-E15, on or just above bedrock.

Feature 3

Located at depths between 80cm and 130cm in Unit B-1, this feature consisted of copious amounts of charcoal and fire-affected rock beneath a layer of large rocks at the 70-80cm level. A portion of the feature lay within a pit, 70cm in diameter, which had been dug into the bedrock at 110cm to a maximum of 130cm (see Figure 5). A layer of oxidized soil lay immediately

beneath the feature matrix. Charcoal from this feature was submitted for radiocarbon analysis, producing a date of 1720 ± 75 years before present. Protein residue studies on two of the fire-affected rocks from the feature resulted in finding bear protein on one; the other was negative for protein residues.

Feature 4

A series of large rocks lying along the eastern edge of S8-E14 at the 30-40cm level was excavated in 1997. This feature contained three millingstones and two core tools. In 1998, the adjoining unit, S8-E15, was excavated, exposing one additional millingstone and two very lightly used manos. Immediately beneath the millingstone in the 40-50cm level were a hammerstone and three flaked stone tools (Figure 7). Note that S8-E15 adjoins S9-E15 in which Feature 1 was recorded at the same level as Feature 4.

Feature 5

Feature 5 consisted of a flat-surfaced pavement of rocks in the northern one-half of S14-E13 between the depths of 6cm and 18cm. Although three wire nails were found in the 0-10cm level, the features is entirely within the midden and does not appear to be historic in age. Several edge-modified flakes and spalls and a single core were found in these levels.

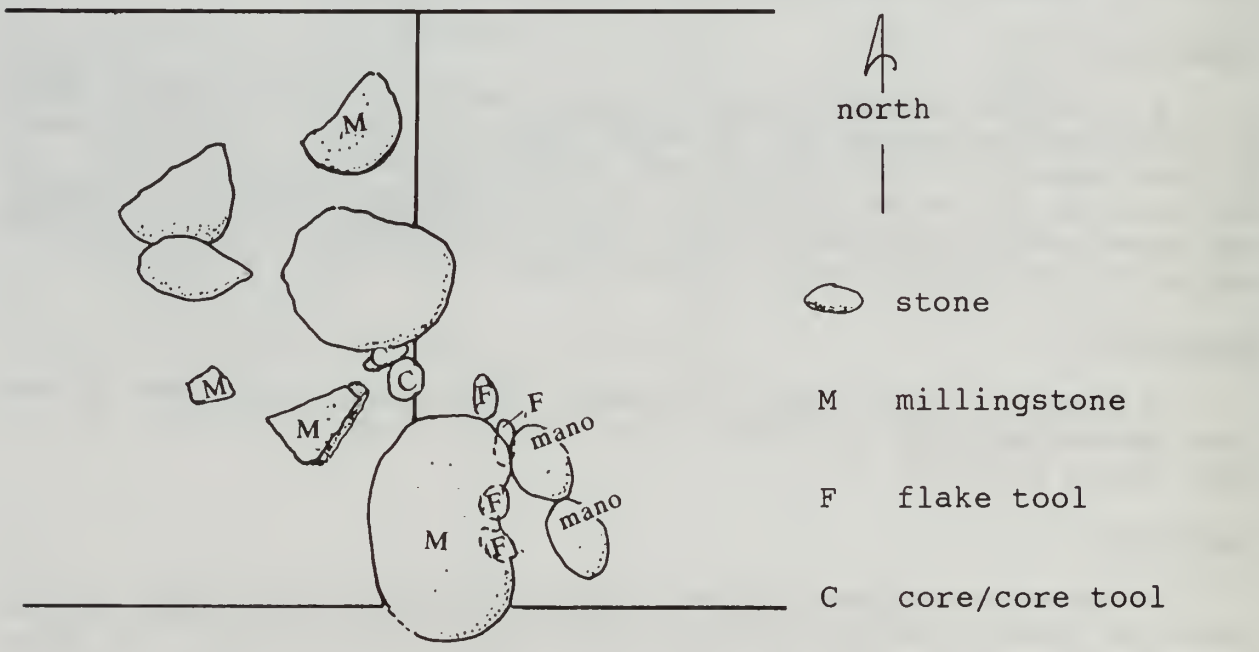

Figure 7. Plan view of Feature 4.

Radiocarbon Analyses

Two charcoal samples were submitted to Geochron Laboratories of Krueger Enterprises, Inc., for radiometric analyses. Sample 102-427, consisting of 13 grams of charcoal, was recovered from a concentration found at a depth of 80-90cm in S14-E8, believed to be a fire hearth. Immediate associations were one core and two edge-modified flakes. A notched point was found at the 70-80cm level in this unit, just above the charcoal.

Sample 102-573 consisted of 74 grams of charcoal recovered from Feature 3, at the 100-110cm level of Unit B-1. This feature is interpreted as a baking oven. The only artifact recovered from this level was a hammerstone. A single notched point was found at the 80-90cm level of B-1, just above the feature levels.

The charcoal fragments were separated from any sand, silt, rootlets, or other foreign matter. The sample was then treated with hot dilute HC1 to remove any carbonates, and with hot dilute NaOH to remove humic acids and other organic contaminants. After washing and drying, the cleaned charcoal was combusted and the carbon dioxide was recovered for the analysis.

Results of the radiometric analysis are given in Table 4. Resulting dates are C-13 corrected.

TABLE 4

Radiometric Dates from CA-SHA-2611

GEOCHRON NO.	CATALOGUE NO.	PROVENIENCE	AGE/BP
GX-24008	102-427	S14-E8/80-90cm	1760 ± 70
GX-24009	102-573	B-1/100-110cm	1720 ± 75

TABLE 5

Obsidian Hydration Values for Debitage and Artifacts From S8-E18
all values are GF/LIW obsidian

DEPTH	VALUES	MEAN FOR LEVEL	STAND. DEV.
0-10	2.7, 3.1, 3.5, 4.3	3.40	0.68
10-20	2.6, 3.0, 3.4, 3.4, 3.4, 3.4, 4.3, 4.4, 4.9, 5.8	3.86	0.92
20-30	3.4, 3.5, 4.2, 4.4, 4.7, 5.0, 5.2, 5.5, 5.5, 5.6	4.70	0.77
30-40	3.8, 3.9, 4.1, 4.3, 4.4, 4.6, 4.7, 5.5	4.41	0.54
40-50	2.6, 3.7, 3.8, 3.8, 3.9, 4.0, 4.1, 4.3, 4.5, 4.7	3.94	0.54
50-60	3.3, 3.4, 3.5, 3.6, 3.7, 3.7, 3.8, 3.9, 4.3, 4.5	3.77	0.36
60-70	3.3, 3.4, 3.5, 3.7, 3.7, 3.9, 4.1, 4.5	3.76	0.40

TABLE 6

Summary Hydration Data for Projectile Points by Type and Source

GRASSHOPPER FLAT		TUSCAN	
GUNTHER POINTS	MEAN		MEAN
1.9 3.0	2.45	0.9 1.3	1.10
CLIKAPUDI NOTCHED			
3.0 3.2 4.3	3.50	1.2 1.6 1.6 1.7	2.32
		2.4 2.6 3.0 3.3	(0.79)
		3.5	
MCKEE UNIFACES			
3.4 3.7 3.7 3.8	4.31		
3.8 4.0 4.2 4.3	(0.78)		
4.4 4.8 5.3 6.3			

standard deviations given in parentheses

Obsidian Studies

Eighty-eight obsidian specimens were measured for hydration band thickness and a subsample of 45 of these was traced to geochemical source through Xray fluorescence analysis. The objectives of the obsidian studies were (1) to obtain a hydration profile to use in dating the site relative to other nearby sites; (2) to determine the possible presence and integrity of stratigraphically separate components; and (3) to determine whether or not McKee unifaces and Clikapudi notched points were contemporary with each other or whether they represent different components. To meet these objectives, 60 pieces of debitage and modified obsidian flakes were selected from stratigraphic levels of S8-E14, a unit which appeared to contain less obvious disturbance than some other units. Twenty-eight projectile points were chosen to include 12 McKee unifaces, 12 Clikapudi notched points, and four Gunther Series points.

Since relative dating was the primary objective, an attempt was made to concentrate on obsidian specimens from the Grasshopper Flat/Lost Iron Wells (GF/LIW) source as artifacts from this source hydrate faster than specimens of Tuscan obsidian, the other common source used in Redding area sites. All points of the McKee, Clikapudi, and Gunther series and all debitage from S8-E14 were divided visually into three groups: those which exhibited classic characteristics of GF/LIW obsidian, those which appeared to be made of Tuscan obsidian, and those which could not be confidently assigned to a source based on visual characteristics. With the exception of the notched points, which were predominantly Tuscan, the hydration sample was chosen from the first and third groups, and the sourcing sample came primarily from the third group with some of the first group added as verification of visual sourcing. Source information, therefore, is not necessarily representative of the breadth of sources found at the site. Based on visual observation, however, the GF/LIW source appears to predominate at around 75% or more of the total obsidian with Tuscan obsidian comprising only about 25% or less.

Xray fluorescence analyses were conducted by Richard Hughes at the Geochemical Research Laboratory. Hydration bands were analyzed by Tom Origer at the Sonoma State University Obsidian Laboratory. Table 5 provides the results for the debitage and artifacts from S8-E14 by level, omitting only the single specimen which was sourced through XRF to the Tuscan source. This Tuscan piece provided a hydration value of 2.3 microns. Source attributions and hydration values for the projectile points appear in Table 6.

TABLE 7

Results of Analyses for Plant and Animal Residues
On 17 Artifacts from CA-SHA-2611/H

CATALOGUE NO.	ARTIFACT TYPE	RESULT
102-63	McKee Uniface	rabbit
102-73	foliate point	negative
102-127	foliate point	deer, rabbit
102-163	Clikapudi Notched point	deer, rabbit
102-166	Clikapudi Notched point	negative
102-220	Clikapudi Notched point	bovine, rabbit
102-254	millingstone fragment	pinon pine
102-258	Clikapudi Notched point	negative
102-271	McKee Uniface	negative
102-367	mano fragment	pinon pine
102-440	sandstone bowl fragment	negative
102-491	McKee Uniface	negative
102-492	McKee Uniface	negative
102-556	Clikapudi Notched point	negative
102-618	Clikapudi Notched point	negative
Stone A	Feature 3 cooking stone	negative
Stone B	Feature 3 cooking stone	bear

Protein Residue Analyses

Seventeen specimens from CA-SHA-2611/H were forwarded to Margaret Newman, Bioarch, Inc. in Alberta, Canada for plant or animal protein residue testing. The sample included four McKee Unifaces, two foliate points, and six Clikapudi Notched points which were tested for animal protein residues. One mano, one millingstone, one sandstone bowl fragment and two cooking stones from Feature 3 were tested for plant protein residues. In addition, three control soil samples were sent for analysis as contaminants in soils may result in false positive precipitation of antisera.

The following is abstracted from the report prepared by Newman (1998) which is on file at the Shasta College Archaeology Laboratory. Potential residues were removed from the artifacts using a 5% ammonium hydroxide solution. Each solution was concentrated and then reconstituted by the addition of 200ml of sterile phosphate-buffered-saline. Initial testing of all samples was carried out against pre-immune serum. No positive reactions were obtained.

The flaked stone artifacts and cooking stones were then tested against antisera to bear (black, grizzly), bovine (bison, cow), cat (bobcat, lynx, mountain lion, cat), chicken (chicken, turkey, quail, grouse), deer (deer, elk, moose, caribou, pronghorn), dog (coyote, wolf, dog, fox), guinea-pig (porcupine, squirrel, beaver, guinea-pig), rabbit (rabbit, hare, pika), rat (rat, mouse), sheep (sheep, goat), and trout.

The ground stone artifacts were tested against antisera to acorn, agave, Amaranthaceae, Capparadaceae, Chenopodiaceae, chia, Compositeae, Gramineae, Malvaceae, pinon, and prickly pear. Plant antisera, raised against extracts from modern species, provide family level identification only.

Results of the analyses appear in Table 7. Ten of the 17 artifacts produced negative results. The absence of identifiable proteins may be due to poor preservation of protein or because the artifacts were used on species other than those encompassed by the antisera. The presence of rabbit protein on four artifacts may indicate that sinews of these animals may have been used in a hafting process.

No clear distinctions were shown between the functional uses of the McKee Unifaces-foliates and the Clikapudi Notched points as both groups contained one example of deer protein. The cooking stone tested positive for bear protein. And two of the three ground stone artifacts were positive for pinon antisera, which in this case probably represents the grinding of grey pine nuts.

TABLE 8

Summary of Cultural Materials Collected from CA-SHA-2611/H

DESCRIPTION	LOCUS A*	LOCUS B**
projectile points		
McKee Unifaces	37	1
foliate, diamond-shape	9	1
Clikapudi Series	18	2
small stemmed points	3	-
Gunther Series	8	-
triangular points	2	-
Desert Side-notched point	1	-
point fragments	18	1
bifaces	4	2
edge-modified flakes/obsidian	60	3
edge-modified flakes/chert	1	-
edge-modified flakes/glass	7	2
edge-modified flakes/metavolcanic	163	22
cobble spalls	73	5
debitage/obsidian	3667	102
debitage/metavolcanic	3364	265
cores/core tools	115	17
notched-pebble net-weights	6	1
anchors	2	-
hammerstones	37	7
manos	27	3
pestles	4	1
millingstones	10	1
mortars	1	-
sandstone plate	1	-
incised stone artifacts	13	-
shaped ochre	4	-
glass bead/glass ball	2	-
glass bottle fragments***	165	5
ironstone fragments	1	5
porcelain button	1	-
metal button, Levi type	-	1
common cut nails	8	8
wire nails	21	-
other metal artifacts	28	8
faunal fragments	148	9
pinenut shell fragments	-	2
fresh-water mussel shell fragments	1	-

* 15.5 cubic meters, 83% of total investigated midden
** 3.2 cubic meters, 17% of total investigated midden
*** some are flaking debitage

Cultural Remains

All cultural remains excepting fire-affected rock were placed in level bags and returned to the Shasta College Archaeology Lab for processing. They were catalogued into Accession 102 which contains 1300 entries totaling 8505 artifacts, debitage and other ecofacts. This figure includes 3935 artifacts and flakes of obsidian, 4146 artifacts and flakes of metavolcanic and other stone, 160 fragments of bone and other organic material excluding charcoal, and 264 artifacts of historic age.

The distributions of flaked stone debitage, faunal remains, and fire-affected rock appear in Appendix A. Two burned pinenut shell fragments, probably of grey pine, were recovered from the 10-20cm level of B-2 and one small fragment of fresh-water mussel shell, weighing 0.1g, was found in the 40-50cm level of S10-E12.

Historic artifacts were primarily limited to the top 10cm or 20cm in both loci. Exceptions were the S10- units in which artifacts of historic age extended throughout all excavated levels, suggesting some type of major soil disturbance (see Table A-7 for distribution of artifacts of historic age). Included are flaked glass and glass debitage. As noted earlier, the surface of Locus A may have been planed off, resulting in uneven midden depths and making the interpretation of artifact stratigraphy more difficult.

Projectile Points

Eighty projectile points are complete enough to assign to type, the majority to the McKee Uniface type with a smaller number to the Clikapudi notched series. The remainder include foliate points, small stemmed points, Gunther series points, and single examples of a triangular type and the Desert Side-notched type. Fourteen are fragments not assigned to type. Proveniences and metric measurements are listed by type in Appendix B.

The vast majority of projectile points are made of obsidian. In addition, two chert points, one basalt point, and two points of glass are present.

McKee Unifaces. The 38 McKee Unifaces include one specimen of chert (102-271) and 37 of obsidian. These artifacts are usually, but not always, completely unflaked on the vertral surface. Several of the examples from Moccasin Creek, however, have some ventral thinning, generally at the base. They differ from the bifacial foliate points in being keeled on the dorsal surface and flat to nearly flat on the ventral face (Figure 8).

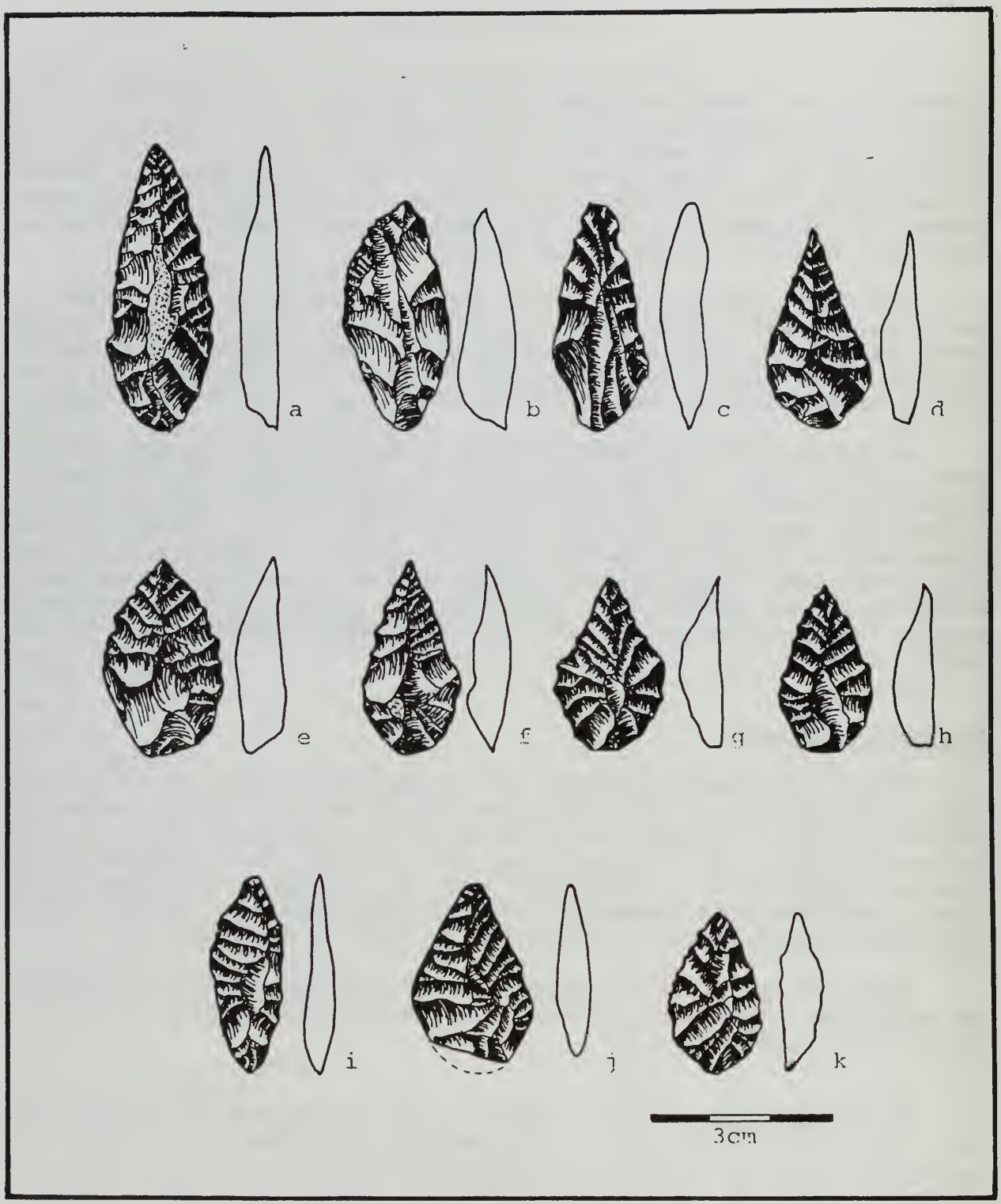

Figure 8. McKee Unifaces (top and middle rows) and foliate projectile points from CA-SHA-2611/H.

These are usually made on blades with the platform generally still visible at the base. Blade edges are slightly convex to straight to concave, the progression being at least in part due to the amount of resharpening. Shoulders are in the basal half in most, but in the center of the lateral margins in those with extensive blade remodification. Two examples (102-13 and -127) have had their blades remodified such that the blades are narrower than the base. Basal margins are convex.

Lengths range from 48mm to 23mm with a mean of 31mm and standard deviation of 5.7mm. Several of the smallest examples are extensively reworked. Weights vary from 5.7g to a tiny 1.0g with an average of 3.2g and standard deviation of 1.3g. Table B-1 in Appendix B provides specific provenience and metric data.

A sample of 12 McKee Unifaces was included in the obsidian studies. All 12 were traced through Xray fluorescence to the Grasshopper Flat/Lost Iron Wells source in the Medicine Lake Highlands. Hydration values range from 3.4 to 6.3 microns with a mean of 4.31 microns and standard deviation of 0.78 microns.

Four McKee Unifaces were analyzed for protein residue. Three had negative results and the fourth was positive for rabbit protein which may be the result of having been hafted with rabbit sinew or may indicate use of this artifact in hunting or butchering rabbit.

Foliate Points. The ten foliate points from CA-SHA-2611/H are bifacially flaked, lenticular in cross-section, and leaf-shaped to diamond-shaped in plan. Beyond these commonalities, attributes are variable. One basalt specimen (102-221; Figure 8h) is very long and slender. The tip is missing, apparently because of an impact fracture.

The others are obsidian. Specimens 102-73 and -1217 have a diamond shape with straight blade edges meeting straight basal margins at pointed shoulders. Two others are also relatively short and broad. The remaining examples are more slender relative to length and have convex blade margins. Two are thick with remodified edges and may be reworked McKee Unifaces.

Sizes and proveniences are provided in Table B-2. Lengths range from 26mm to 34mm with a mean of 29mm and standard deviation of 2.7mm. Weights vary from 1.4g to 3.3g with a mean of 2.4 and standard deviation of 0.6g.

No foliate points were included in the sample submitted for obsidian sourcing and hydration studies. One of the two specimens included in the protein residue studies produced negative results and the other proved positive for both deer and rabbit protein.

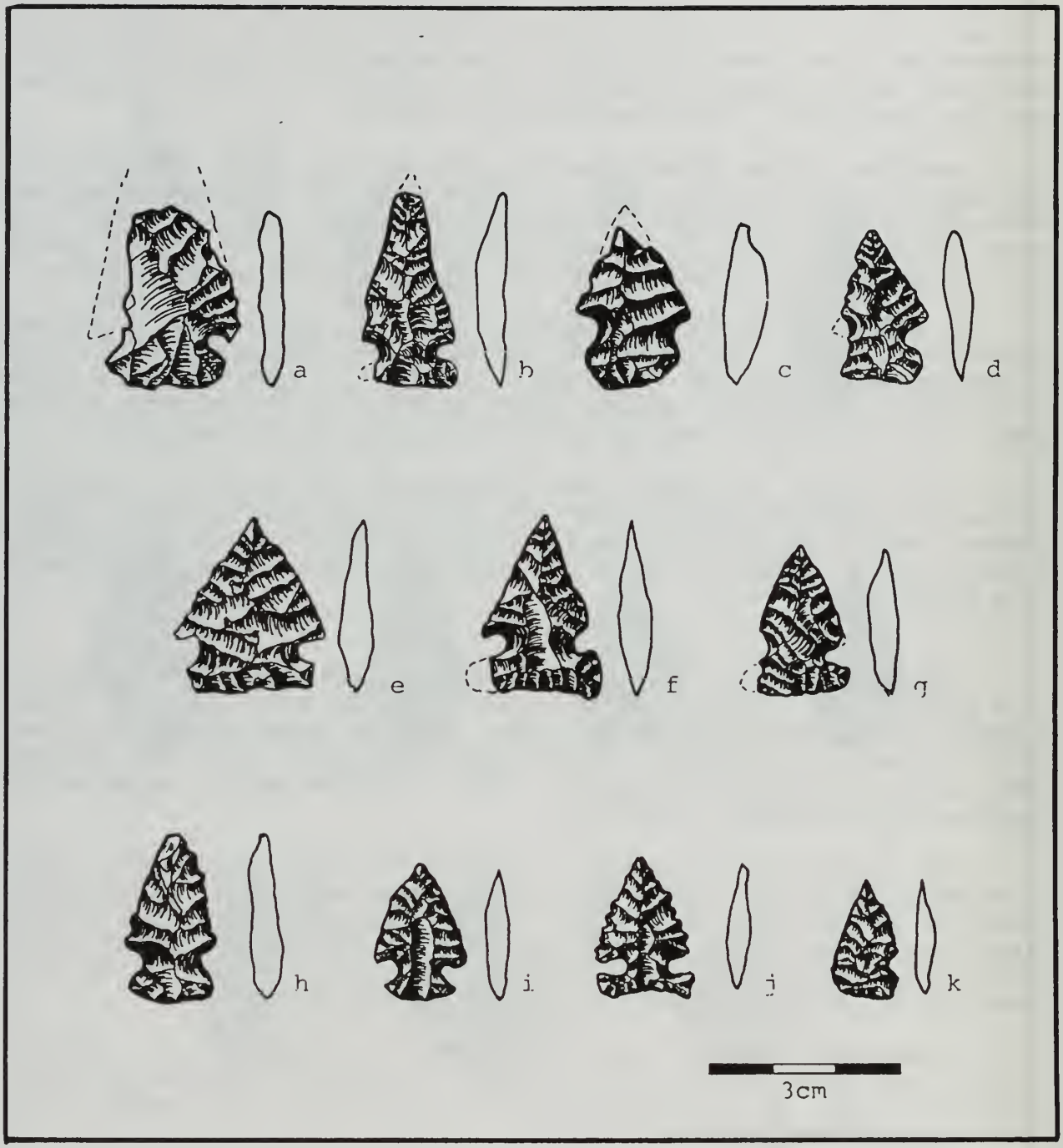

Figure 9. Clikapudi series points from CA-SHA-2611/H.

Clikapudi Series Points. The 20 points assigned to the Clikapudi Series (Figure 9) include eleven corner-notched specimens, five side-notched, three which each have one corner-notch and one side-notch, and one tiny specimen recovered from the bottom levels of Unit B-1 which has a side-notch on one edge and is unnotched on the other. Side-notching in this instance is defined as having some remnant of the lateral blade still existent below the notch. One specimen (102-618) is made of chert and all of the others are obsidian.

Blade edges are variable, but most are slightly convex to irregular. Six specimens are very finely serrated. None are deeply serrated, although there is much breakage of the blade edges. Notches vary from wide to narrow. Basal margins are convex in two specimens and concave in two others. All others are flattish to irregular in basal margin outline.

As a group they are widely variable in size, possibly largely the product of rejuvenation. The means and standard deviations of dimensions and weights of these and other point types appear in Table 9. Proveniences and dimensions of individual specimens are given in Table B-3.

A sample of 12 Clikapudi Series points was submitted for obsidian source and hydration measurements. Three were found to be derived from the Grasshopper Flat/Lost Iron Wells geochemical source with a mean hydration value of 3.5 microns and the other nine were attributed to the Tuscan Source with a mean hydration value of 2.23 microns (see page 20). Six Clikapudi Series points were among the sample analyzed for protein residue. Of this group, four had negative results, one tested positive for rabbit and deer protein, and one was positive for rabbit and bovine protein.

TABLE 9

Means and Standard Deviations of Projectile Point Dimensions
mm and grams with standard deviations in parentheses

TYPE	NO. IN TYPE	LENGTH	WIDTH	THICK.	HAFTING WIDTH	WEIGHT
McKee Unifaces	38	31 (5)	16 (2)	7 (2)	-	3.2 (3.1)
foliate points	10	29 (3)	17 (4)	6 (1)	-	2.4 (0.6)
Clikapudi Series	20	25 (4)	16 (3)	5 (1)	9 (3)	1.7 (0.8)
stemmed points	3	26	15	6	8	1.7
Gunther Series	8	24 (6)	16 (2)	3	4 (1)	0.7
triangular point	1	24	18	3	-	1.1
Desert Side-Notch	1	-	16	-	4	-

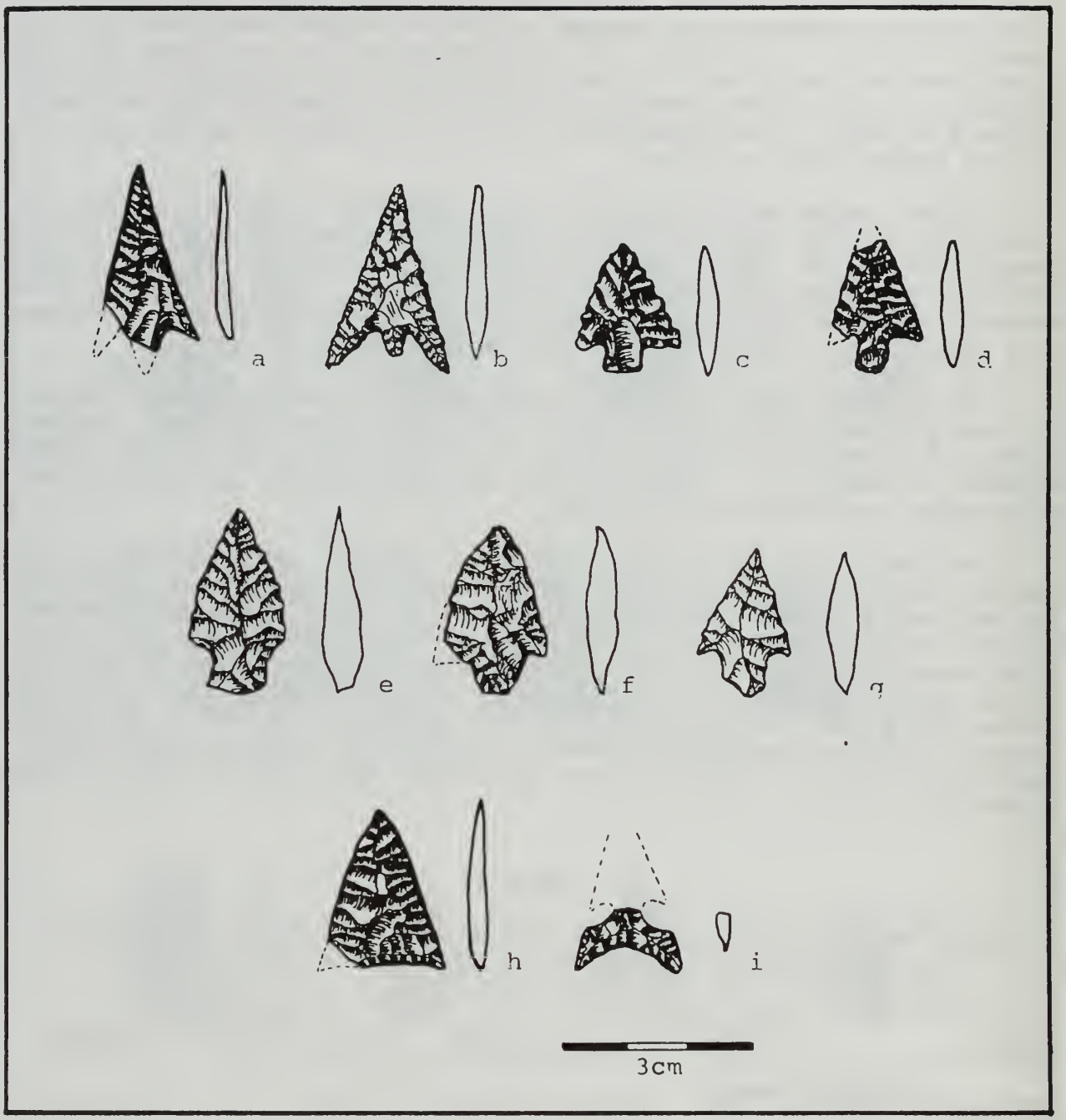

Figure 10. Miscellaneous projectile points from CA-SHA-2611/H; top row, Gunther Series points; middle row, small stemmed points; bottom left, triangular point; bottom right, Desert Side-Notched point; b. is made of glass and all others are obsidian.

Stemmed Points. Three specimens are classed as small stemmed points. Blade edges are straight to slightly convex. Two have slightly acute shoulder angles and the third has oblique shoulders. Stems on two are slightly expanding and one is slightly contracting (Figure 10e-g). Lengths vary from 23mm to 29mm; widths on all three are 15mm. Thicknesses range from 5mm to 7mm and weights from 1.0g to 2.3g (see Table B-4).

These differ from the Gunther Series points in being thicker and heavier and having wider stems/hafting widths which range from 7mm to 9mm. They give the appearance of being remodified Clikapudi series points.

Gunther Series Points. The eight Gunther Series points are small and thin with pronounced barbs. Seven are made of obsidian and one (102-646, Figure 10b) is made of an amber-colored glass. Blade edges are generally straight (Figure 10a-d), although the glass specimen has a slightly concave shape. Only the latter has "classic" barbs that are longer than the stem, although stems are broken in three cases. Stems are narrow and contracting in four specimens and wider and slightly expanding in a fifth. Proveniences and dimensions appear in Table B-5.

Four Gunther Series points were analyzed as to source and hydration value. Two were traced to the Grasshopper Flat/Lost Iron Wells source with hydration values of 1.9 and 3.0 microns. The other two are made of Tuscan obsidian with hydration values of 0.9 and 1.3 microns.

Triangular Point/Preform. A small triangular point was found in the 50-60cm level of S8-E14. Blade edges are very slightly convex and the base is slightly concave (Figure 10h). One basal corner is broken. It measures 24mm in length, an estimated 18mm in width and 3mm in thickness and weighs 1.1 grams.

A tip of clear window glass found in the 0-10cm level of S10-E14 and a base found in the 60-70cm level of S10-E12 fit together to form a long, narrow triangular point measuring 39mm by 12mm by 2mm and weighing 0.7g. All edges are bifacially flaked with straight margins. This artifact was snapped in half, probably during manufacture.

Desert Side-Notched Point. The classic Redding subtype of the Desert Side-Notched type is represented by a single specimen, a broken base found in the 0-10cm level of S10-E14. Very thin, it is characterized by deep notches and a deeply concave basal margin (Figure 10i).

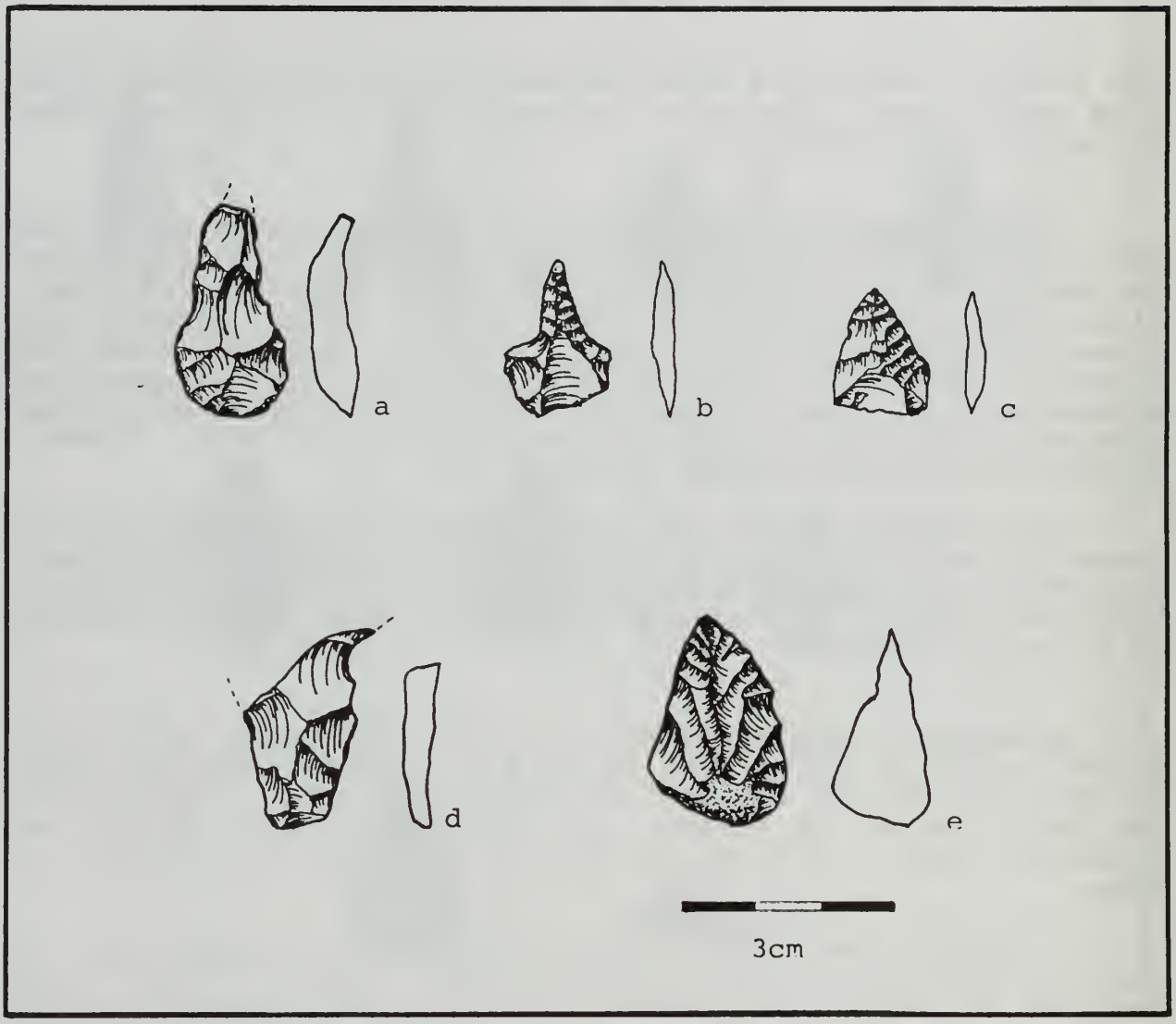

Figure 11. Bifaces of obsidian from CA-SHA-2611H.

Bifaces

The ten obsidian artifacts in this group are completely flaked on both faces. Two symmetrical specimens have narrow tips and appear to have been drills. Specimen 102-765, recovered from the 30-40cm level of S10-E12, measures 29mm in length, 16mm in width and 6mm in thickness and weighs 2.3g. The tip is broken Figure 11a). Specimen 102-780 is much narrower, 21mm in length, 15mm in width, and 4mm in thickness. It weighs 0.8g and was found in the 50-60cm level of S10-E12 (Figure 11b).

Four bifaces are round to somewhat angular in plan view. One specimen from the 10-20cm level of B-2 is a tiny but crudely flaked triangular-shaped piece (102-590) which measures 17mm by 13mm by 3mm and weighs 0.5g. It may be a remodified tip of a broken point (Figure 11c). A similar specimen (102-831) from the 90-100cm level of S10-E12 measures 16mm by 14mm by 4mm and weighs 0.9g. The third (102-663), recovered from the 40-50cm level of S7-E15, is much thicker. It measures 21mm in length, 18mm in width, is 8mm thick, and weighs 2.6g.

One broken fragment (102-941) appears to be the base of a symmetrical artifact with a flat basal margin and expanding lateral edges similar to the foliate points (Figure 11d). It is thinner than those artifacts, however, and not classed with that group. It was found in the 20-30cm level of S14-E11.

Three obsidian pieces (102-984, -1134, and -1135) are very broken and their original shapes are not determinable. All are completely bifacially flaked and may be point fragments.

The final biface is a thick, core-like artifact (102-607), recovered from the 50-60cm level of B-2, which measures 29mm by 19mm by 13mm and weighs 4.9g. It is flat on one surface and convex on the reverse (Figure 11e). It appears to be made of poor quality obsidian, possibly from Little Glass Mountain, and perhaps could not be thinned to the desired shape.

Edge-Modified Flakes

The 258 edge-modified flakes from the site include 63 specimens of obsidian, one of chert, nine of glass, and 185 of metavolcanic material. These artifacts have one or more modified edges but lack the extensive shaping and facial flaking of other flaked stone artifacts. They are distinguished from fortuitously edge-damaged flakes by having series of patterned percussion or pressure flake removals.

The 63 obsidian pieces are small and thin and, with two exceptions, thickness are between 3mm and 8mm. The exceptions

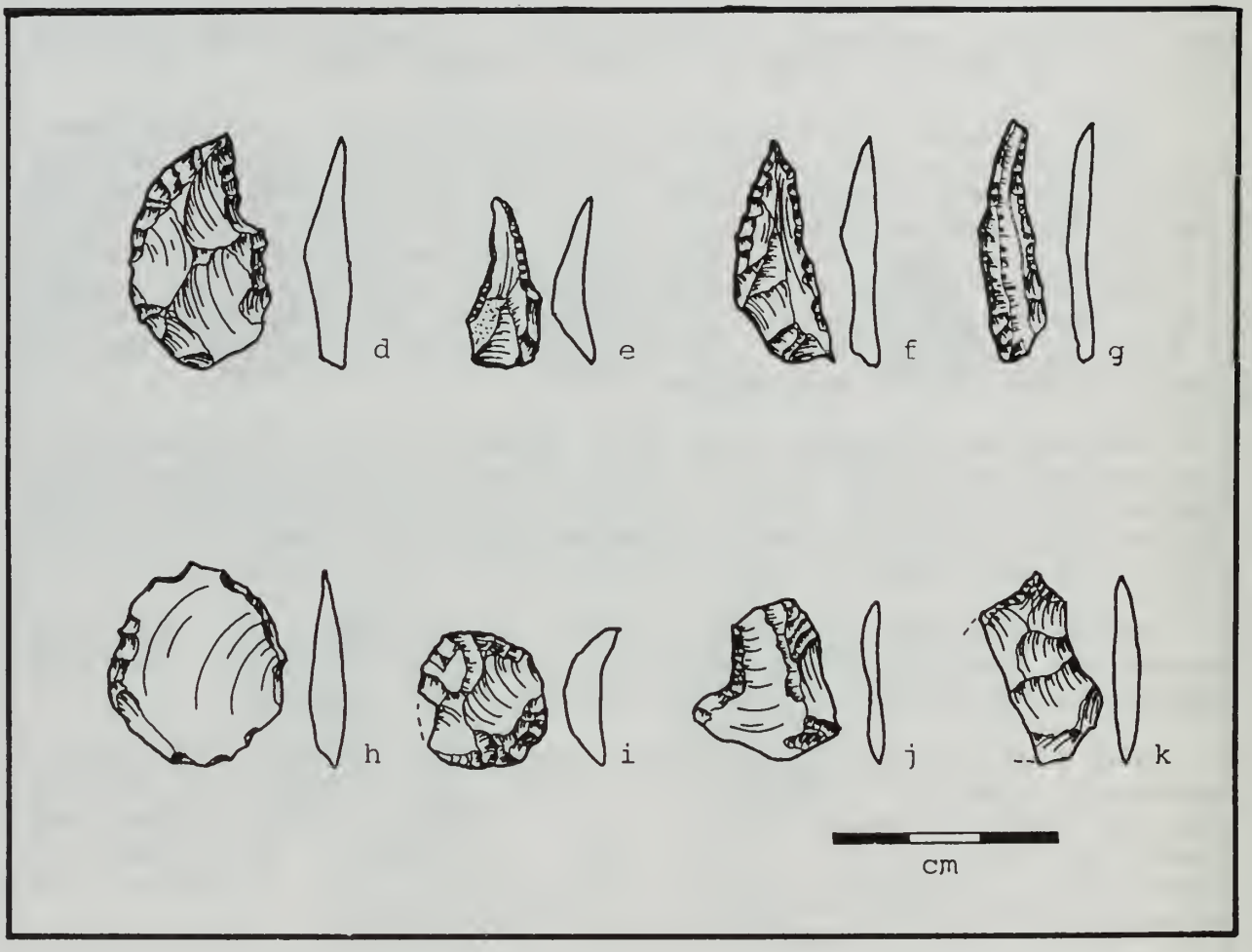

Figure 12. Edge-modified flakes of obsidian from CA-SHA-2611/H.

measure 10 and 12mm in thickness (see Table B-7). Flaking patterns on all but one are unifacial. Most are fortuitously shaped fragments with a single flaked edge and edge angles in most cases between 30 degrees and 50 degrees with a mean of 38.1 degrees and standard deviation of 5.66 degrees. Three have short segments of steeper edge flaking with angles between 55 and 63 degrees. These are not further characterized.

One specimen (102-274) is a short, symmetrical artifact with the upper part shaped into a broad point and the lower part unworked and still bearing a cortical surface.

Three groups each appear to have some uniformity of shape. One group of nine unifaces includes elongated crescent or kidney shapes, each with extensive edge modification and one pointed end. Edge angles are in the 33 to 53 degree range. The widest of this group at 19mm and heaviest at 3.0g is a foliate shaped piece (102-275) except that one edge curves inward to form a concave edge (Figure 12a). Others are thinner with lengths ranging from 23mm to 32mm (Figure 12b-d). Specimens in this group include 102-17, -19, 259a, -779, -804, -1054, -1212, and -1248.

Thirteen specimens in a second group are small ovals with all or nearly all of their perimeters flaked (Figure 12e-f). Specimens include 102-111, -154b, 171b, 189a, 189b, 222a, -259b, -259c, 305, -395, -663, -947, and -1155. Sizes range from a tiny 16mm by 13mm by 3mm weighing 0.5g to 28mm by 24mm by 10mm and weighing 5.8g with means of 20mm in length, 17mm in width, 5mm in thickness, and 2.1g in weight. All came from Locus A where they were distributed throughout the midden with a mean depth of 36cm.

A group of four specimens (102-33, -154c -171a, and -385) have amorphous shapes but each has one or more notched or concave-shaped edges (Figure 12g). These also occur throughout the midden in Locus A. One additional artifact (102-222b) is unique in having a small graver-like point at one end. The opposite edge is also modified (Figure 12h).

The single chert specimen (102-1239) was found at the 40-50cm level of S14-E17. Medium grey in color, it is symmetrical in shape (Figure 13a) and measures 19mm in width and 6mm in thickness. It is unifacially modified and may be the base of a point, possibly a McKee or foliate, although it would be thinner than most.

The nine glass specimens are unshaped with modification on one or more edges. Two specimens (102-219, and -777a) exhibit retouch on one edge of a fragment of clear window glass. The first was found in the 0-10cm level of S8-E14 and the second in the 40-50cm level of S10-E12. Three others (102-524, -581 and -859) contain slight modification to the edge of a fragment of curved amber glass. The first two of these were recovered from

the upper 20cm of Locus B and the third from the 10-20cm level of S10-E14. The remainder (102-750a, -762a, -827, and -853a) are olive green in color. Most have slight modification on one edge only, although one contains a curved edge extending three-fourths of the way around its perimeter (Figure 13b). Proveniences of the first three are the 0-10cm, 20-30cm and 80-90cm levels of S10-E12 and the last was found in the 0-10cm level of S10-E14.

The 185 flakes of metavolcanic material exhibit retouch, varying from 10% to 85% of the perimeter. Retouch on 54% of the specimens is on the dorsal surface and on 27% it is on the ventral face; 5% have bifacial retouch and 7% have unifacial retouch on both the ventral and dorsal faces. Maximum lengths range from 25mm to 136mm with a mean of 73mm and standard deviation of 21mm. Weights vary from 3.3g to 299.9g, averaging 91g with a standard deviation of 75g. Table B-8 provides provenience and size data for individual artifacts.

Based on a sample of 86 specimens, the most common shape is a convex edge configuration (Figure 14a) which accounts for 37% of the total; in 14% the modified edges are straight or more-or-less straight, often with two edges meeting in a wide point (Figure 14b); 7% have concave or notched edges (Figure 14c); and the remainder are minimal or too irregular to classify as to edge configuration. Angles of the modified edges range from 32 to 77 degrees with a mean of 56 degrees and standard deviation of 10 degrees.

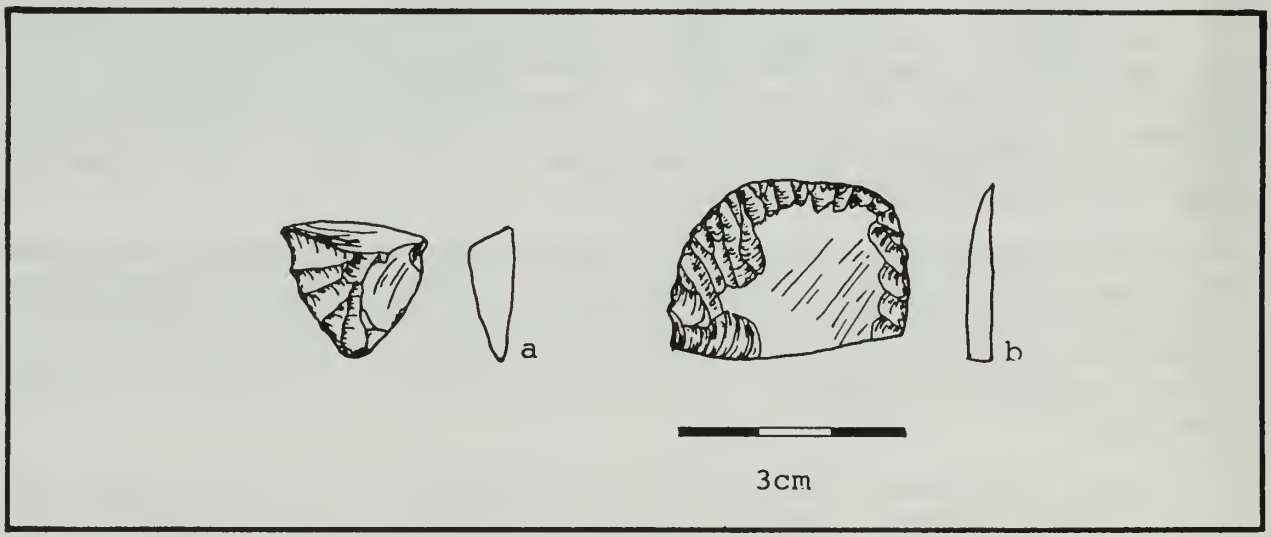

Figure 13. Edge modified flakes of chert (a) and glass (b) from CA-SHA-2611/H.

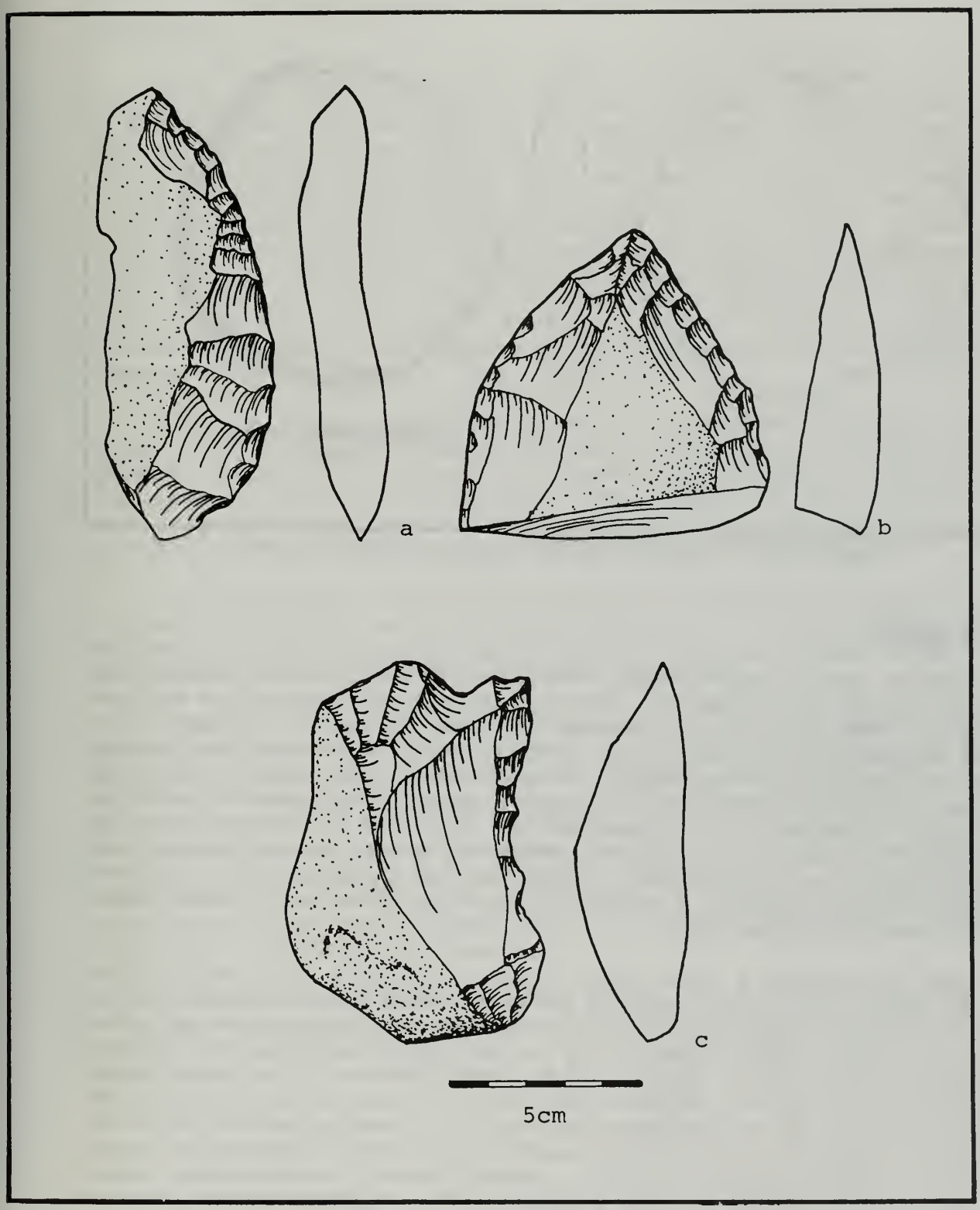

Figure 14. Edge-modified flakes of metavolcanic material.

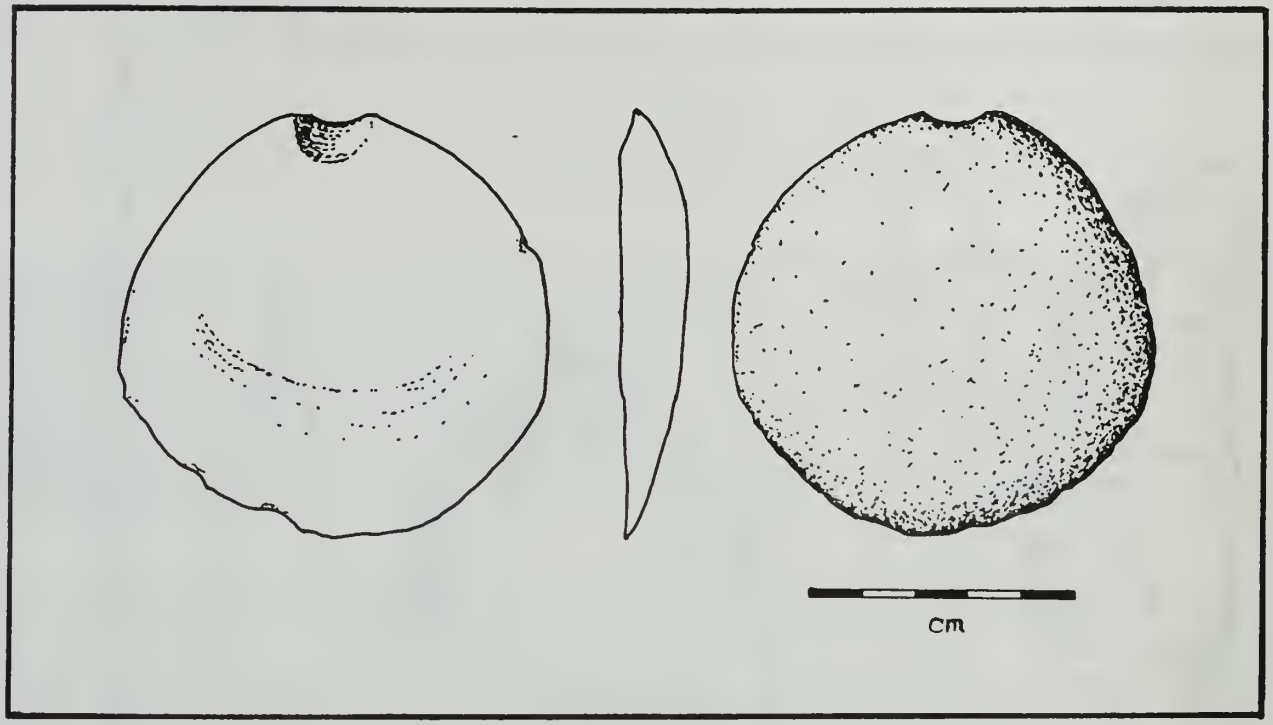

Figure 15. Cobble spall from CA-SHA-2611/H.

Cobble Spalls

Cobble spalls are large primary cortical flakes of metavolcanic or andesitic material, created by striking a cobble against an anvil. The striking platform is identified by a small cone-shaped depression on one edge, usually but not always the center of the widest, thickest edge. The ventral face is usually flat and the perimeter opposite the platform is feathered to a thin, sharp edge (Figure 15). These differ from the modified flakes in that they are usually thinner, made of a softer material, and generally are not retouched. They are of interest in that they are far more common in cultural deposits older than 1500 years than in younger deposits.

The 78 examples from CA-SHA-2611/H (Table B-9) range from 39mm to 141mm in length with a mean of 86mm and standard deviation of 21mm. Excluding one extremely large specimen weighing 601.5g, weights range from 6.2g to 299.8g, averaging 94g with a standard deviation of 60g. Sixty-five percent are unmodified, the naturally acute edges usable for cutting and scraping. Several appear quite rounded and worn. The other 35% are retouched, predominantly on the ventral surface. Edge configurations are nearly always convex in plan view. Edge angles range from 25 to 60 degrees with a mean of 43 degrees and standard deviation of 11.3 degrees, the unmodified specimens with the more acute edges.

Debitage

The debitage catalogued from the site includes 3769 pieces of obsidian, 3629 flakes of basalt or metavolcanic material, eight flakes of chert, and 81 flakes of glass. Totals for obsidian and glass include many tiny flakes recovered through the use in three units of 1/8-inch mesh screens. Debitage from these three units was separated in the lab into 1/4-inch fractions and 1/8-inch fractions for easier comparisons to other units. The distribution of the 1/4-inch fraction of obsidian is presented in Table A-1 by numbers of flakes and total weight per level. The distribution of the 1/8-inch fraction appears as Table A-2. Table A-3 shows the distribution of the 1/4-inch fraction of glass and Table A-4 presents the distribution of basalt and metavolcanic debitage.

Flakes of metavolcanic material outnumber obsidian in both loci when considering only the 1/4" fraction. Obsidian has a greater frequency in Locus A, however, being 45% of the debitage compared to only 28% in Locus B. When the 1/8" fraction is added and only debitage from unit S10-E15 is compared, obsidian jumps to about 69% of the total with 31% being metavolcanic.

The obsidian debitage consists primarily of small waste flakes. Very few were suitable for use. The few larger pieces are mostly fragments of large flakes, lacking a sharp edge. Only two flakes were noted as having utilized edges.

The 562 flakes collected through the 1/8-inch mesh screen in S10-E15 were sorted by size and type. The majority of the 385 obsidian flakes (75%) are less than 10mm in maximum size; 19% is in the 10-20mm size range; only 6% is in the 20-30mm size range. Three percent is classed as secondary cortical, 12% as biface thinning flakes, 5% as platform preparation, and 6% as pressure flakes. The remaining 74% consists of interior flakes and non-diagnostic fragments with no cortex and simple flaking patterns of no more than three flake scars on the dorsal face. Table 10 summarizes these percentages.

The 177 metavolcanic flakes range in size from 8mm to 180mm with the largest percentage (40%) being in the 10-20mm size range; 20% is 20-30mm in size, 16% is less than 10mm, 13% is 30-40mm in size, 7% is 40-50mm, and 4% greater than 50mm in maximum size. Of the 41 (23%) cortical flakes, seven are completely covered with cortex on the dorsal surface. The 134 (77%) interior flakes range from thick, early core reduction flakes to thin edge preparation flakes. A few of the larger specimens could have served as cutting tools, but most have thick, irregular edges. Use wear rarely shows on this generally dense, granular material.

TABLE 10

Types of Flakes by Percentages of the Total for Material

	cortical	biface thinning	platform preparation	simple interior	pressure
obsidian	3	12	20	74	6
meta-volcanic	23		5	72	

Only eight flakes of chert were recovered from the site. All are simple interior flakes. One greyish-green flake measures 28mm in length and the rest are 17mm and smaller. Several are broken. At least six different colors are represented. Two flakes are white, two a dark grey, one a greyish-green, one a dark brown, one is light brown, and one is pale grey. All but the largest appear to have been heat-treated. Horizontal distribution is wide across the site, from S7-E15 to S14-E13. They were found only in the deeper levels, however. All were recovered below 40cm with a mean depth of 59cm.

Eighty-one pieces of debitage were identified among the glass fragments, representing at least seven different source materials. Five flakes were of amber glass, four of turquoise, three of clear glass, probably window glass, and 69 were from four different shades of green bottle glass--dark olive, dark yellowish-olive, medium olive, and medium green. One flake is 47mm in maximum length, 12 are in the 20-30cm size range, 41 are between 10and 20cm, and 27 are less than 10mm, most of the last group collected from the 1/8-inch mesh screens used in unit S10-E15.

Because glass "cores" are limited to the thickness of the glass, flakes do not fall into the same percentages of those in the obsidian debitage. A few could be considered primary and secondary cortical flakes, but most are simple interior percussion flakes. Only two pressure flakes were noted among the 1/8-inch fractions. Some of the other glass fragments, not counted here, may be shatter from initial percussion reduction.

Distribution is very limited. Only five units contained any glass debitage. In three of these, all in the S10-line, glass debitage was found to the base of the midden, suggesting some extreme historic disturbance to that part of the site. The distribution of the 1/4-inch fraction is presented in Table A-3. The 1/8-inch fraction consisted of 24 flakes recovered from S10-E15.

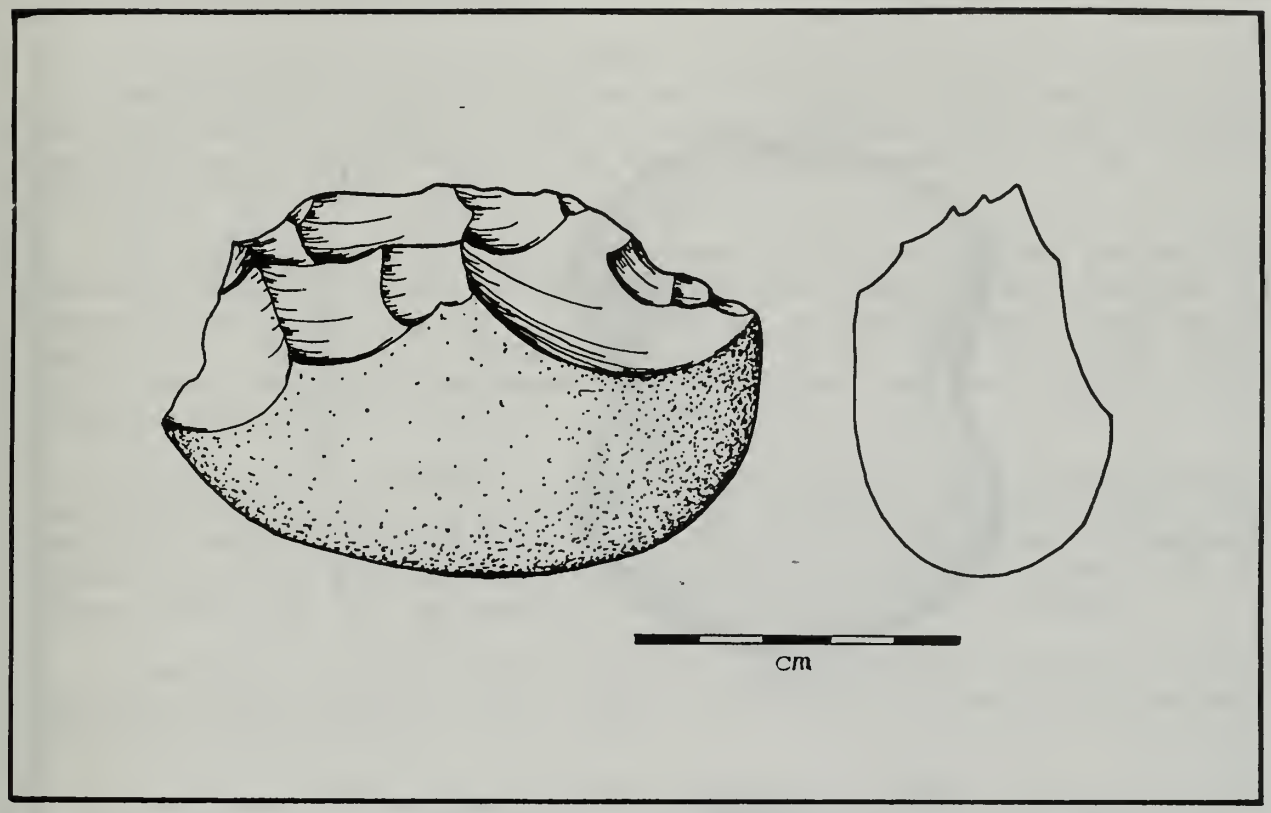

Figure 16. Bifacial cobble tool from CA-SHA-2611/H.

Cores/Cobble Tools

The division between cores which served as tools and those which were used only as a source of flakes is highly subjective. The 132 metavolcanic cores from CA-SHA-2611/H include 84 which have secondary retouch on one or more edges or otherwise appear to have been made as or used as tools and 48 which do not. The former group, marked with an asterisk on Table B-10, which provides metric data and provenience, have a mean length of 77mm and mean weight of 219g. Three-fourths are unifacially modified and only one-fourth have bifacially modified edges. The majority have between 30% and 60% of their perimeters flaked and edge configurations are generally convex to irregular (Figure 16). Edge angles average 66 degrees with a standard deviation of 10 degrees.

The 48 cores average 73mm in length and 219g in weight. Although these average measurements are similar to those for tools, the range is much greater; standard deviation for weights among tools is 162g while for cores it is 269g. Eighteen are single platform cores, although two of these have very minimal flaking, and the remainder are unpatterned, multiplatform cores.

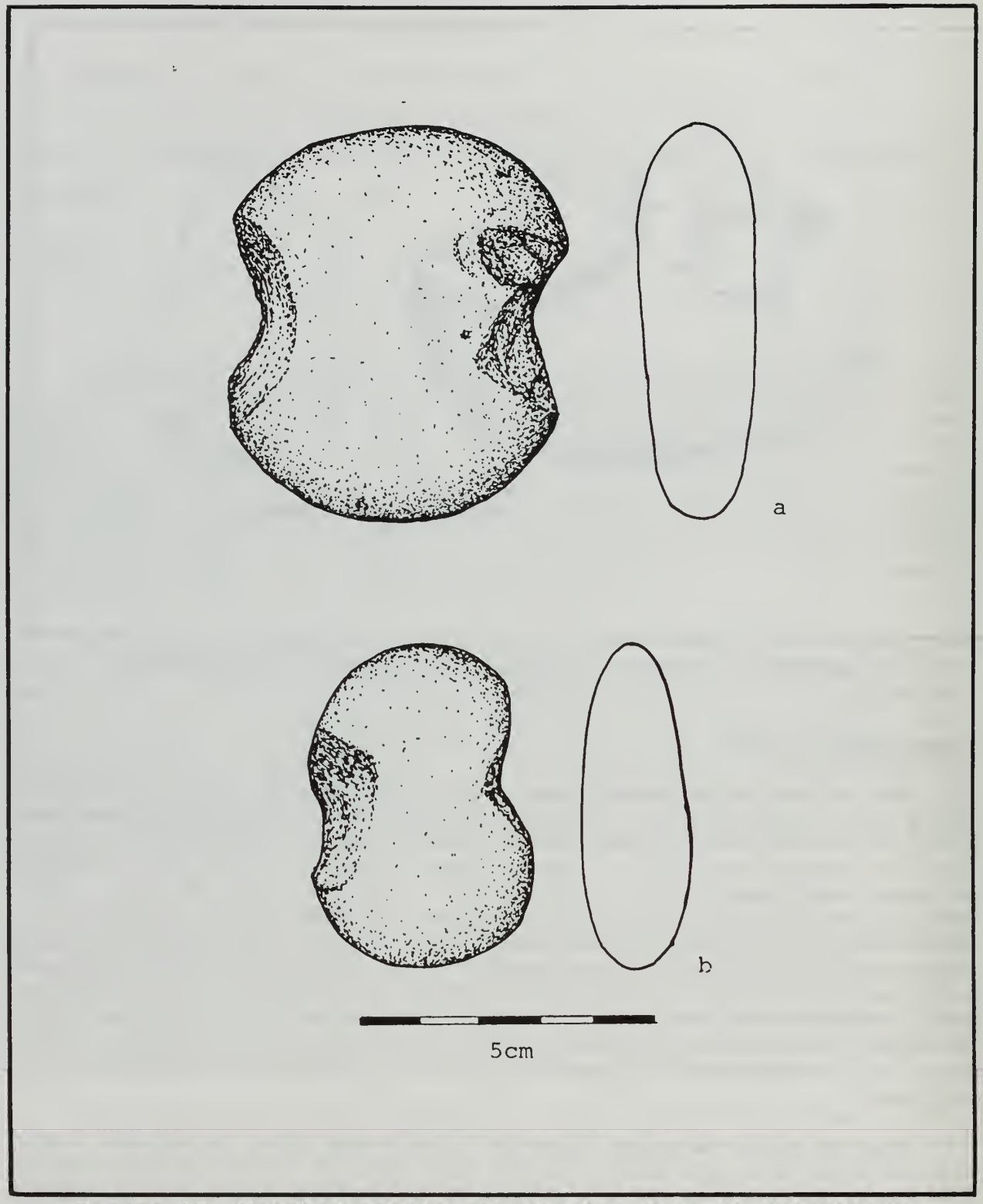

Figure 17. Notched-pebble net-weights from CA-SHA-2611/H.

Notched-Pebble Net-Weights

Seven metavolcanic artifacts each have one or two bifacailly flaked notches, but vary from each other in other attributes. All are relatively thin with thickness ranging from 12mm to 23mm, and all have relatively high stratigraphic proveniences with a mean of 18cm (Table B-11).

Two and possibly a third fragment fit the typical pattern of having bifacial notching on both lateral edges. The largest of these, Specimen 102-909, is made of a coarse meta-aggregate material. The side notches, the only modification to the artifact, are 31mm and 27mm wide and indent 6mm and 8mm (Figure 17a). Overall measurements appear in Table B-11.

The second specimen, 102-648, is made of a finer-grained metavolcanic and has notches which indent about 4mm into the lateral edges (Figure 17b). A third, 102-1094, is a fragment broken through the notches. It appears to be a similar type as those above and is the same width as 102-648, but thinner.

Specimen 102-579 is a fairly small pebble with a single crudely-flaked notch on one edge. The edge of the notch appears to have been ground.

Specimen 102-124 is a small, flattish cobble, oval in plan, which contains two notches, although they are located on two "corners" of one edge and don't oppose each other.

Specimen 102-241 is much larger than the others but is broken in length. The fragment, perhaps half of the original piece, contains a single notch, but is matched on the opposite edge by an irregular water-smoothed indentation which could have served the same function as a notch. This artifact shows distinct ochre-staining on both faces the width of the extant end and extending approximately 20mm lengthwise onto each face.

The final specimen, 102-1036, is a fragment with crude bifacial flaking patterns on both edges. The flaking removed the cortex but does not appear to have been strong enough to create indented notches.

Anchors

Two artifacts are large, flat stones each of which has one bifacially flaked and ground notch. These are classed as anchors as they apparently were made to hold line. They are similar to net-weights but are much larger, and notches are on the end rather than a lateral edge as in most of the net-weights.

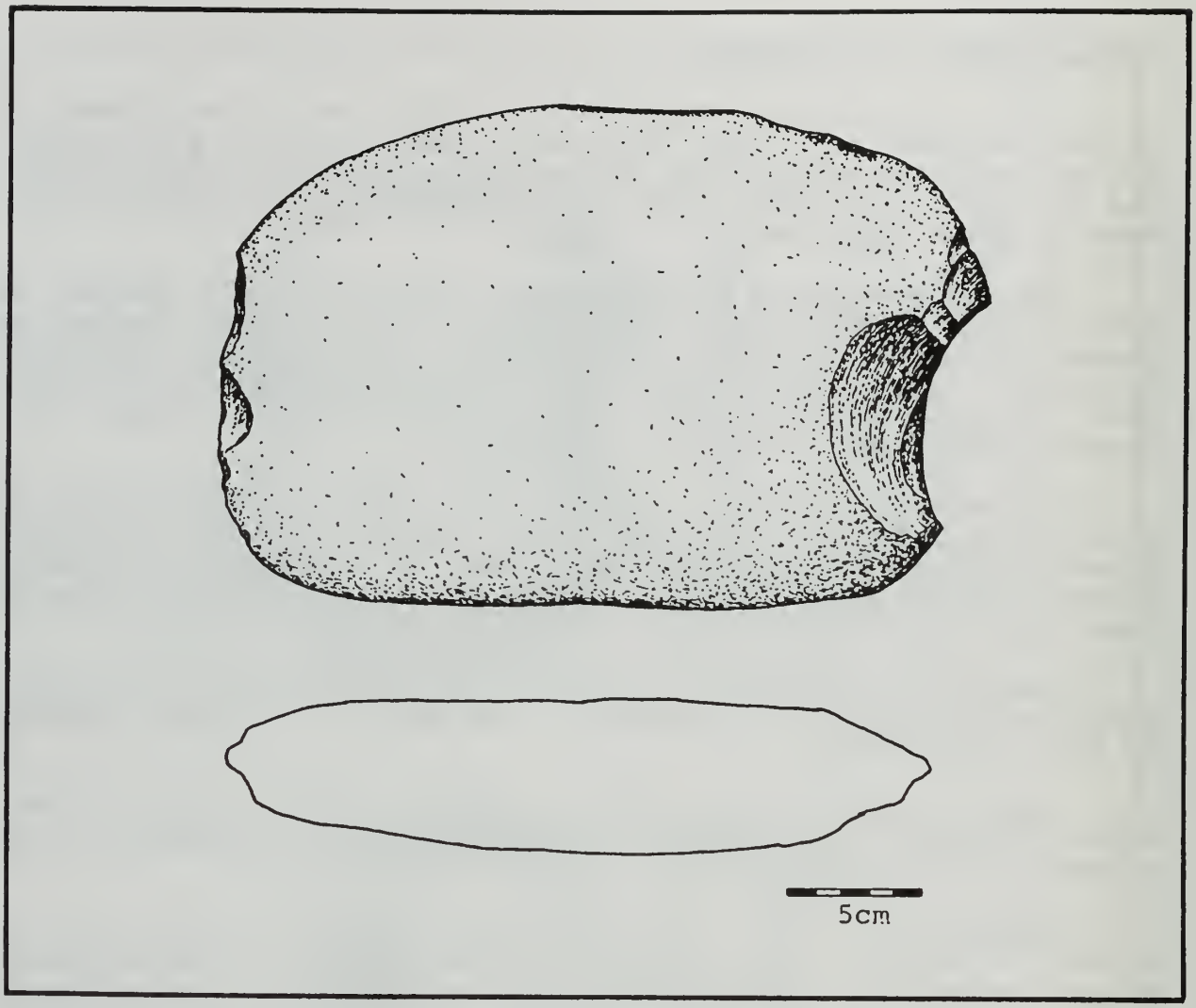

Figure 18. Anchor from CA-SHA-2611/H.

The larger specimen, 102-650, was found on the surface of the eastern margin of the site. It measures 283mm in length, 182mm in width, and 50mm in thickness and weighs 4.67kg. The notch, located at one end, is 75mm wide and indents approximately 17mm into the length of the stone. The opposite end is bifacially battered rather than flaked, resulting in a flattening of the profile (Figure 18). One lateral margin is also battered, flattening about 60% of its length. The opposite edge is not modified.

The other specimen, 102-738, at 191mm by 156mm by 58mm and 2.25g in weight, is not quite as large. It has a similar bifacially flaked and ground notch at one end. The opposite end has a natural waterworn notch which opposes the flaked notch. There is some heavy battering on a portion of the edge. This specimen was collected from the 40-50cm level of S8-E15.

Anvil

A large flattish cobble has extensive battering on both ends similar to hammerstones, but also contains large pecked or battered areas central to both faces (Figure 19). The artifact, 102-1075, measures 160mm in length, 124mm in width, and 40mm in thickness and weighs 1.16kg. The battered surface on one face is approximately 70mm by 54mm in size, and on the reverse face is about 20mm in diameter. The battered areas are not indented, and are rougher and smaller than the similar battered surfaces on hopper mortars.

The artifact was found at the 60-70cm level of S14-E12. Two hammerstones were found in the same level of the unit and two others lay in the two levels immediately above.

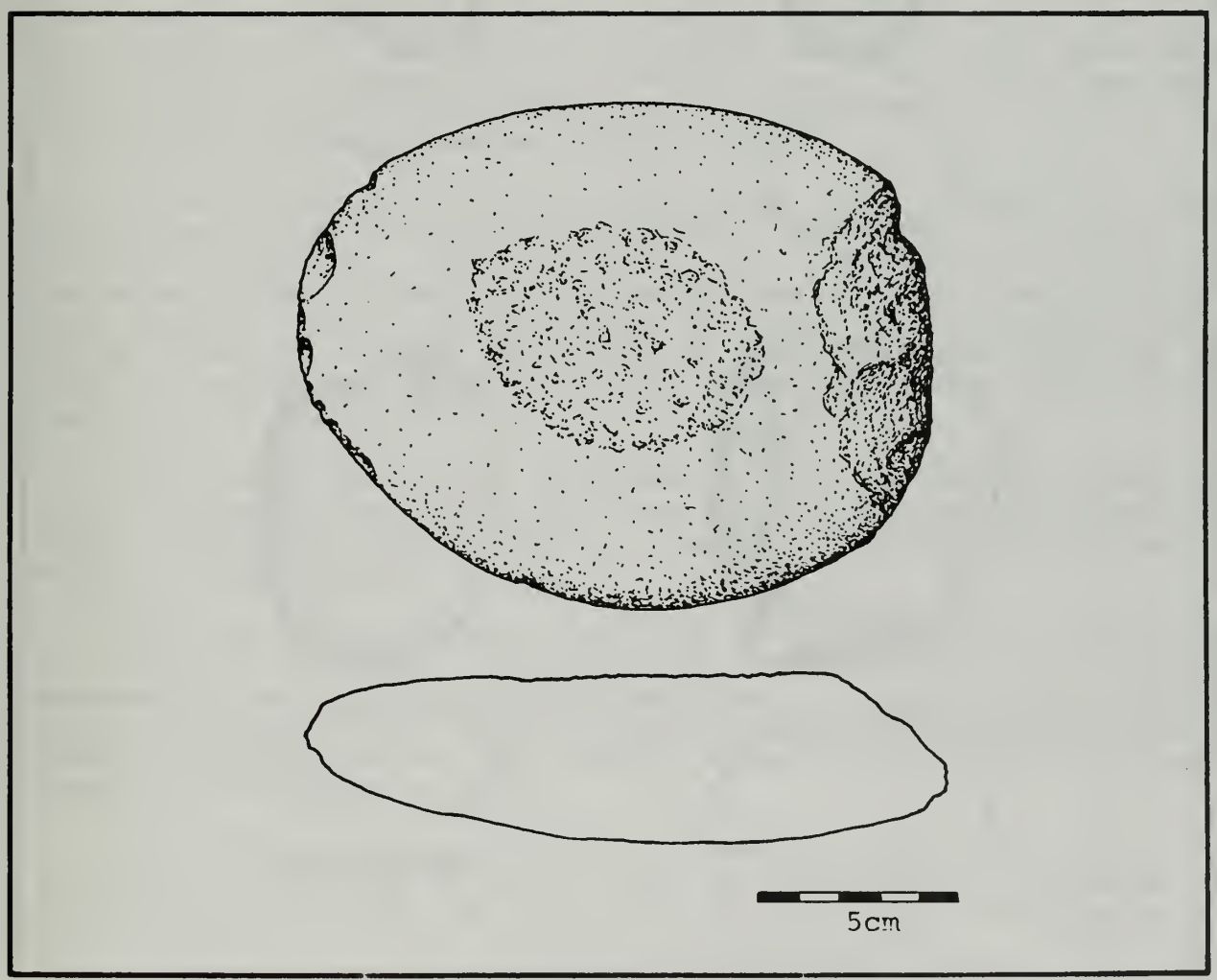

Figure 19. Anvil from CA-SHA-2611/H.

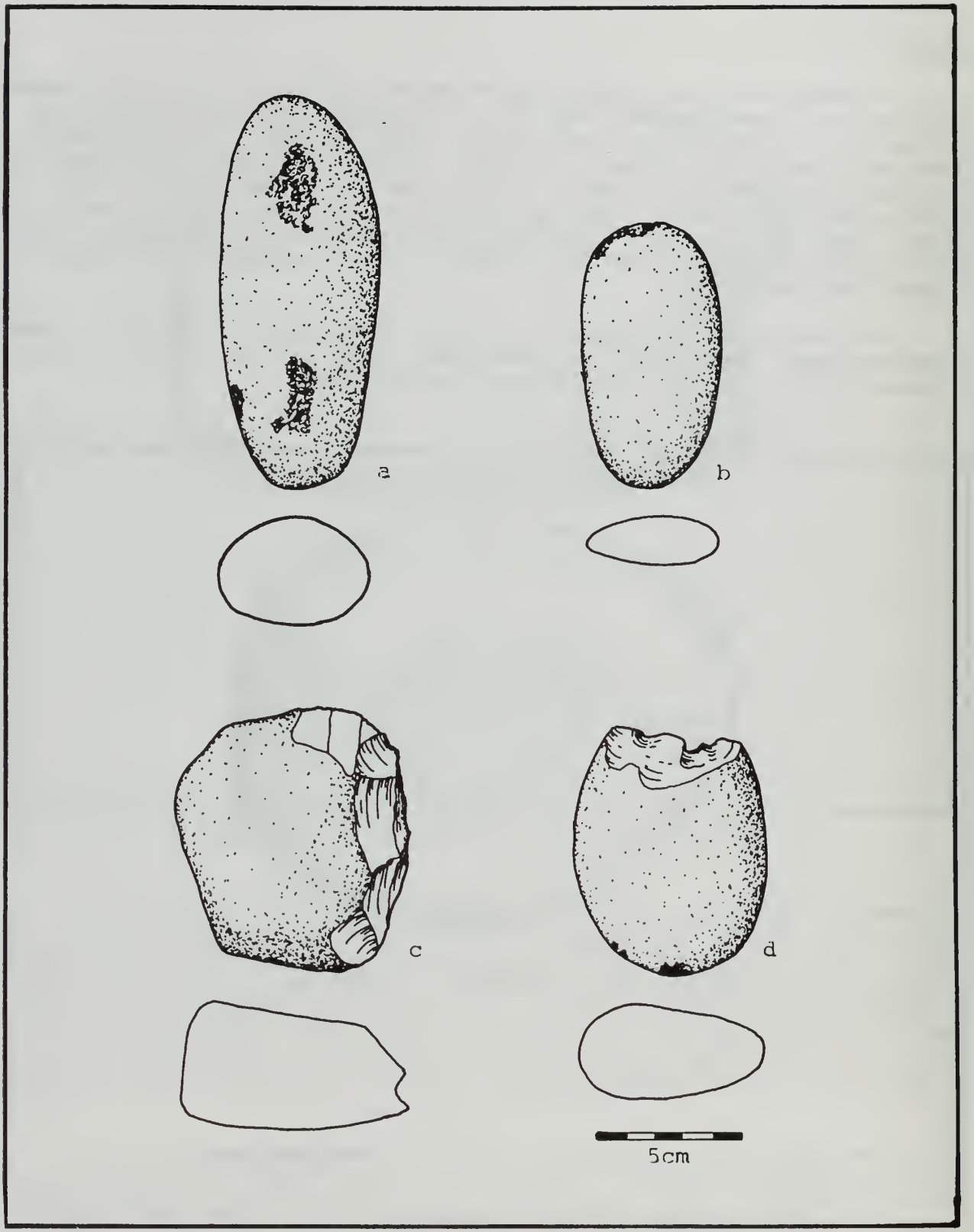

Figure 20. Hammerstones from CA-SHA-2611/H.

Hammerstones

The 37 metavolcanic and seven andesite hammerstones from the site can be divided into five or six types, based on the shape and location of battering. Nearly two-thirds of the 44 specimens are round to oval cobbles with battering on one or both ends and, in four cases, the lateral edges adjoining the end (Figure 20b). These vary widely in size, ranging from 48mm to 128mm in length, averaging 89mm, and from 26g to 720.5g with an average 335g in weight. Six are broken in length (Table B-12 provides dimensions and proveniences). The mean depth for this type is 49cm.

Three specimens have facial battering (Figure 20a), resembling tools known to have been used for the bipolar reduction of obsidian nodules. Specimen 102-876 has battering in five locations, near each end on both faces as well as on one lateral edge. Each battered surface measures 15mm to 25mm in diameter. This specimen measures 120mm by 66mm by 46mm and weighs 560.9g. Two others, 102-5 and 102 317, both broken in length, have battering only on the face near the extant end. The latter specimen is much smaller than the other two, however, and its function is uncertain. These have a mean depth of 22cm.

Three specimens (102-47, -988, and -1195) combine the end and facial battering found in the above two types. The first is broken in length. The other two, both of andesite, combine battering on both ends with centrally located facial battering on both faces. They are opposites in size, 120-988 being very large, 128mm in length and weighing 1607.3g, while 102-1195 is 50mm in length and weighs 116.9g. Mean depth for these three specimens is 35cm.

Two small specimens (102-200 and -630), nearly round in plan, are extensively battered around 75% to 80% of their perimeters. These are 46mm and 75mm in length and 84.9g and 266.8g in weight, respectively.

Each of five specimens (102-60, -61, -388, -457, and -542) is flaked in addition to being battered. These are cores which are extensively battered on the generally bifacially flaked margins (Figure 20c). They are the largest hammerstones with a mean length of 112.5mm and average weight of 649.8g. The mean depth for this type is 23cm.

The final three specimens (102-365, -392, and -426) are elongate cobbles, bifacially flaked at one end with evidence of battering on or near the other end (Figure 20d), reminiscent of chisels found in other northern California sites. In only one case, however, is the battering on the very end opposite the flaked end, but all three have battering on the edge near the end. Mean depth for these three artifacts is 48cm.

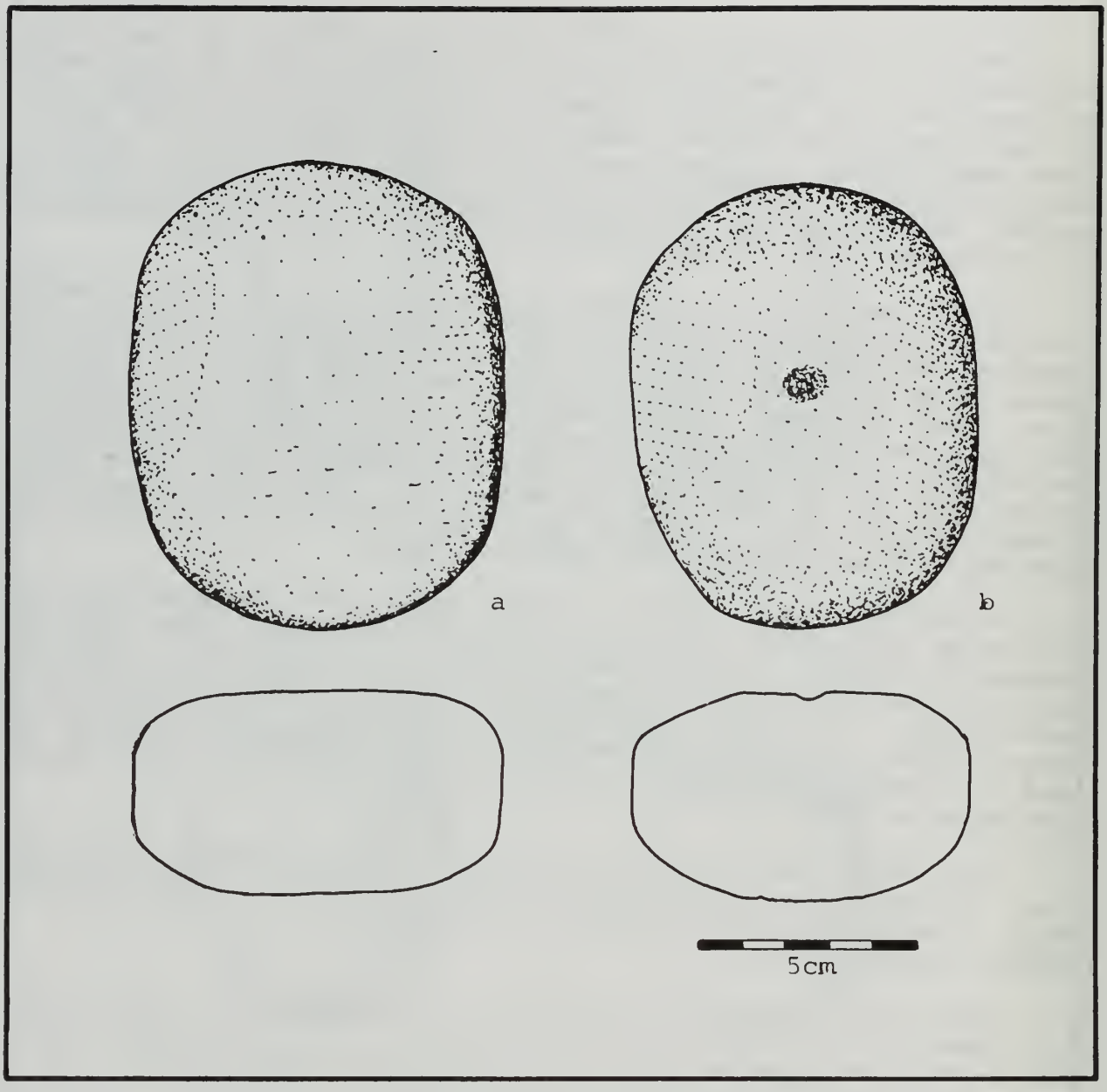

Figure 21. Manos from CA-SHA-2611/H.

Manos

The thirty manos from CA-SHA-2611/H include seven specimens of andesite, a soft but rough volcanic material, two of granite, one quartz and one sandstone specimen. The remainder are meta-volcanic in material. Although most are of a consistent size, convenient for holding in the hand, two are smaller and two larger than most, with the overall range spreading from 85mm to 146mm in length and 270.5g to 1592.2g in weight. Dimensions and proveniences of individual specimens are provided in Table B-13.

Excluding two fragments, the manos are divided into two descriptive groups--those with extensive edge battering and shaping such that they are oval to nearly rectangular in profile (Figure 21) and those with limited edge battering or no edge modification. The first group includes 14 specimens. Twelve of these (102-1, -2, -165, -324, -332, -333, -367, -674, -818, -820, -840, and -982) have very flat to slightly convex grinding facets on both faces. In some, the opposing faces are identical, for instance both very flat, but others have one very flat face paired with a slightly convex face. One specimen with extensive edge shaping (102-675), made of sandstone, has one very flat face with the opposite face apparently unused. One additional specimen (102-1182) is completely shaped but split lengthwise such that only one ground face remains.

The 12 unshaped to partially shaped specimens include seven bifacial and five unifacial manos. Facets on the bifacial specimens (102-125, -629, -819, -821, 907, -974, and -1035) are generally less well developed than those on the shaped specimens. One unique mano (102-821), made on a quartz cobble, is thicker relative to width and length than the other specimens, somewhat rectangular in cross section, and features slightly convex facets on adjoining rather than opposing faces. One face has some centrally located facial pecking. Facets on the unifacial unshaped manos include one specimen (102-118) with a very flat face and four (102-157, -635, -713, and -1034) with less developed flattening.

Two additional artifacts are classed with the manos although they do not have detectable grinding facets. They are of a size similar to the other manos and both were found in association with mano and/or millingstone features. Specimen 102-817, made on a flat granite cobble, has some edge shaping. The other, 102-714, an unshaped cobble of dense metamorphic material, features numerous striations perpendicular to its length on one naturally convex face. The opposite, naturally flat face, appears to have been pecked. One end is battered.

Three of the specimens contain pecked indentations in the centers of one or both faces, and a fourth contains two such

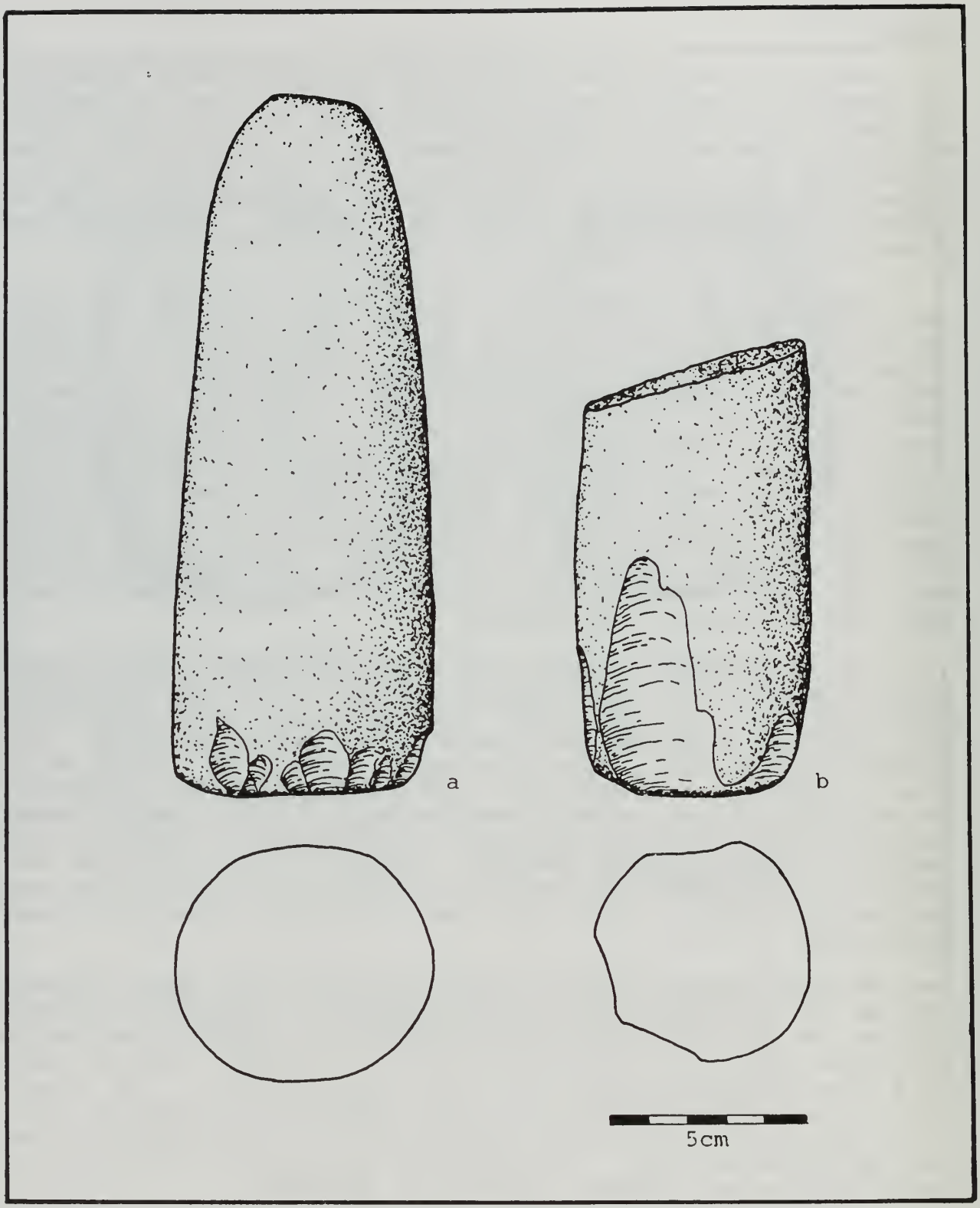

Figure 22. Pestles from CA-SHA-2611/H.

pecked areas on either end of a single face (Figure 21b). Three others show facial pecking that differs in being more diffused and not concentrated into a depression. Several, particularly the more extensively shaped specimens, have lateral edge facets in addition to the larger facial facets (see Figure 21).

Two specimens (102-165 and -324) contain extensive ochre staining on one face and a third (102-820) appears to have some ochre around the edges of the grinding faces.

Pestles

Four of the five pestles recovered from the site are elongated metavolcanic cobbles shaped by pecking and polishing and the fifth, with extensive edge battering, appears to have been in the process of being shaped. Artifact measurements and proveniences appear as Table B-14.

Three of the five pestles are complete. One specimen, 102-547, collected from Locus B, is conical in shape (Figure 11a). The larger end of the pestle has a flattened facet measuring 57mm in diameter and is slightly spalled. The smaller end also has a battered facet that measures 22mm in diameter.

A second shaped and polished specimen is also conical but smaller than the other two complete specimens. The grinding facet on the larger end measures about 44mm in diameter, but it is partly spalled away. The opposite end is also extensively spalled, such that the remnant resembles a chisel-like point.

Specimen 102-649, the third of the complete specimens, is not completely shaped but contains extensive battering on two sides in what appears to be an attempt to thin the artifact, which is wider and thicker than the other pestles. It is somewhat naturally conical, and the very flat facet on the larger end measures 56mm by 40mm. The opposite end does not appear modified. This specimen was found on the surface of the east side of the site, midway down the slope to Moccasin Creek, where it may have been redeposited by earth-moving equipment.

Specimen 102-398 is missing both ends but appears to be the shaped and polished midsection of a conical pestle with a maximum diameter of greater than 64mm. It contains ochre staining on one side which extends onto the broken surface.

Specimen 102-4, found on the slope west of the large vandal hole, is the basal fragment of a cylindrical-shaped pestle. The flattened end contains a 45mm-diameter facet ringed by spalled scars.

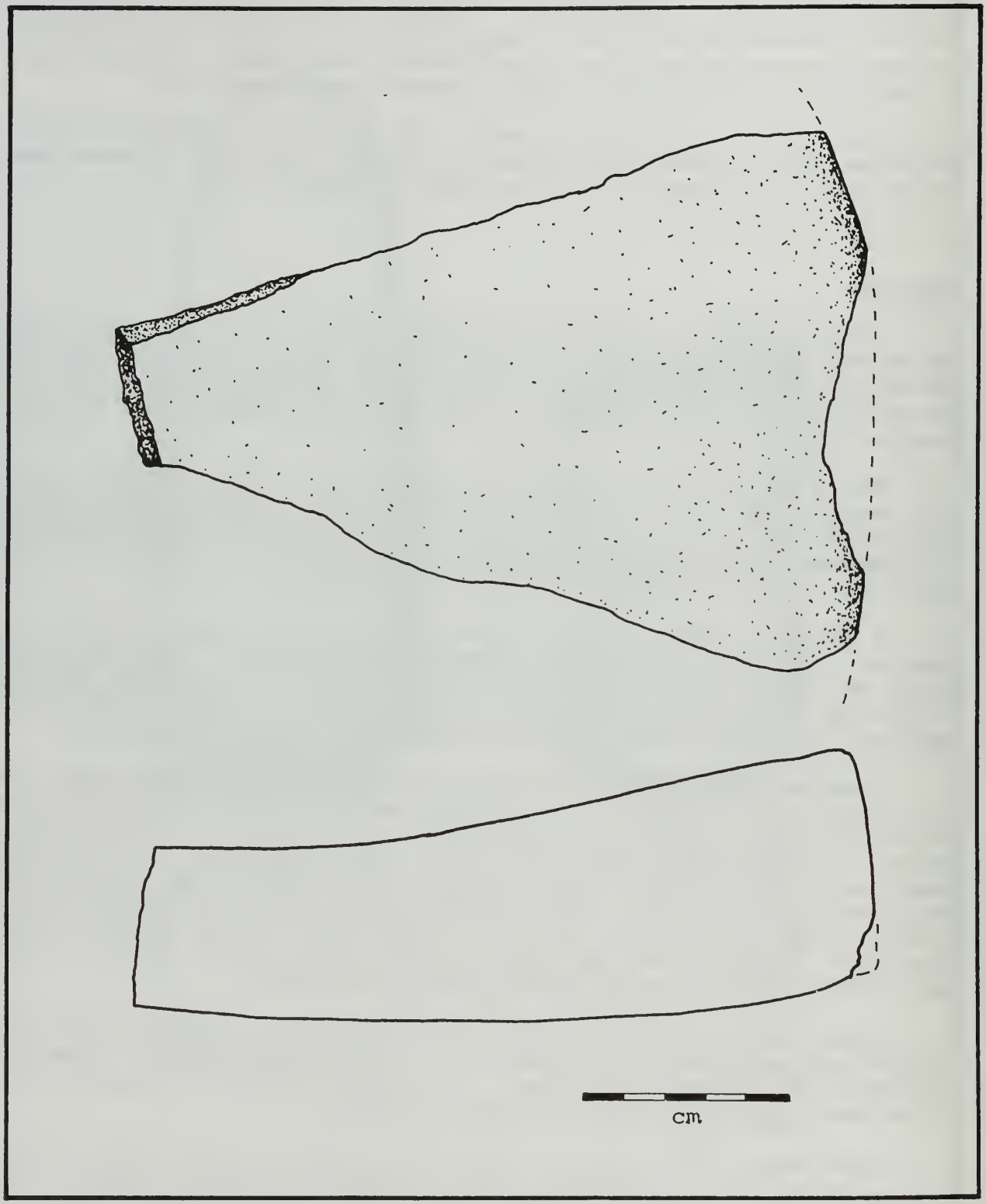

Figure 23. Millingstone fragment from CA-SHA-2611/H.

Millingstones

The 11 millingstones include nine of metavolcanic stone, one of andesite, and one of granite. All but two are fragmentary and all are ground on a single face. Table B-15 reports the proveniences and extant measurements of these artifacts.

Three of the millingstone fragments have shaped edges which curve in plan view, two of them (102-184 and -253) with dished grinding surfaces (Figure 23) and the third (102-3) with a flat grinding face. The reverse face on all appears unmodified. Three others, one with a dished surface (102-254) and the others with a flat face (102-368 and -502) lack any remnant of the perimeter and may or may not have been shaped.

The other five specimens do not appear to have been shaped around the exterior. One andesite specimen (102-537) is deeply dished and the others have flattish ground faces. Specimens 102-199 and -715, the only unbroken millingstones collected from the site, are of this type. The former is an elongated stone with grinding on one face which is mainly concentrated near one end. The reverse face, while not ground, features a pecked depression about 30mm in diameter and this artifact may also have served as an anvil. Specimen 102-715, a much larger piece, was found in association with Feature 4 (see Figure 7) where it was lying with the milling surface downward.

Hopper Mortar

One hopper mortar of metavolcanic stone was collected from the 0-10cm level of S14-E9. The stone has one naturally flattish face with the opposite surface very convex. The flat face was used as a mortar, producing a pounded area measuring 175mm in diameter but with no measurable depression (Figure 24). Overall measurements are 358mm in length, 270mm in width, and 175mm in thickness, and its weight is 19.28kg. Gouges on the mortar surface indicate movement or scraping by heavy earth-moving equipment.

One other hopper mortar was noted on the site surface of Locus A near the large vandal depression and two others were noted on the surface of Locus B. These were not collected. The latter two were photographed and measured. Mortar A, which lay about 4m northwest of Unit B-1, measures 313mm by 275mm by 80mm in thickness. The 111mm-diameter mortar cup is no more than 1mm in depth. There is some slight pecking on the reverse side. Mortar B, located about 1m north of unit B-1, measures 396mm by 325mm and features a relatively deep indentation, 17mm in diameter and 15mm in depth. The reverse side contains no obvious modification.

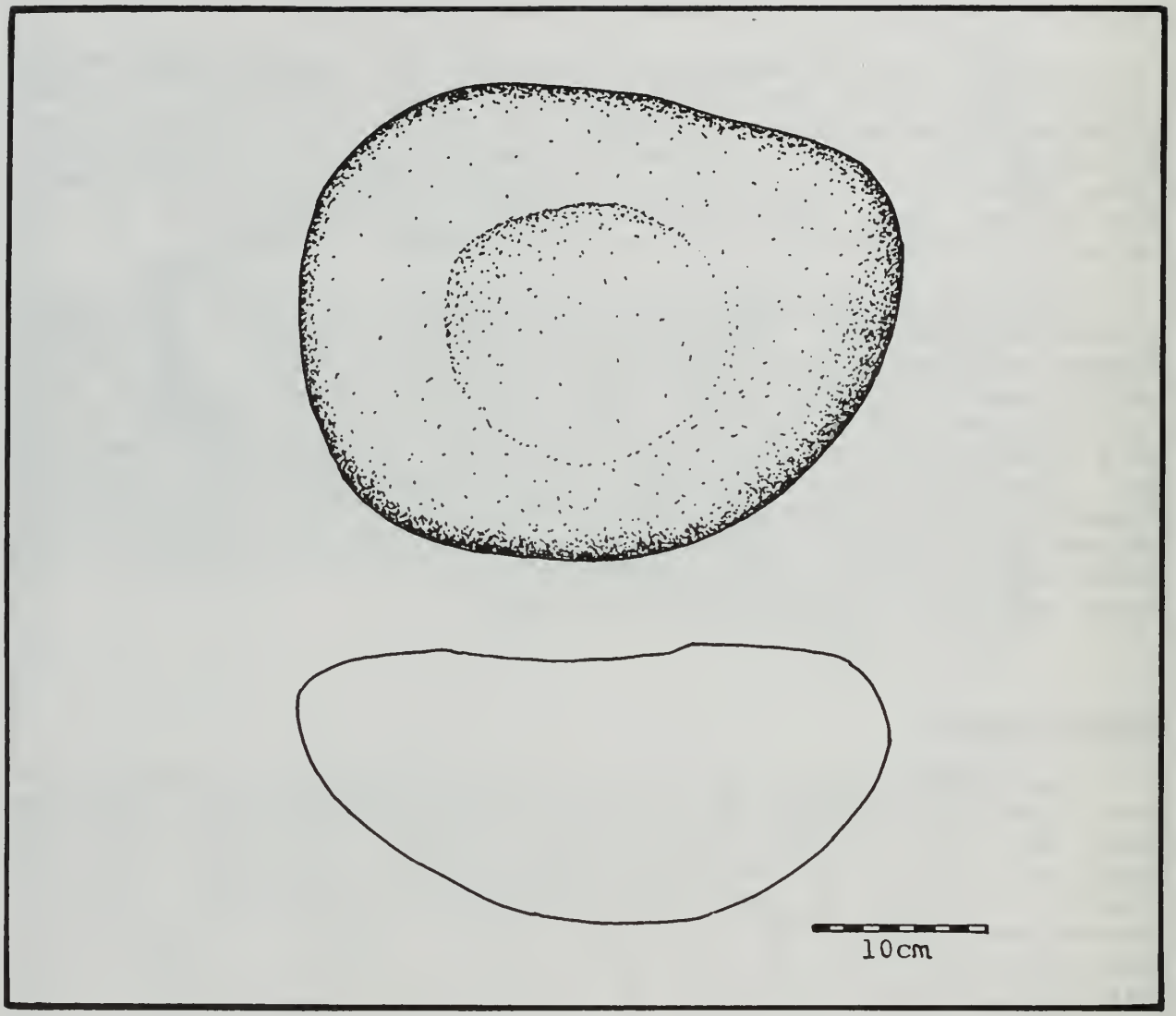

Figure 24. Hopper mortar from CA-SHA-2611/H.

Sandstone Plate

Twenty-three fragments of sandstone recovered from the 90-100cm level of S14-E8 constitute about three-fourths of a single plate or dish. The fragments range in size from 104mm (Figure 25) to less than 10mm in size, but appear to have belonged to a dish at least 190mm in diameter. Round in plan view, the artifact's perimeter is entirely shaped with the edge tapering inward toward the base. The bottom surface was perhaps roughly shaped, but is not smooth. The upper surface is very smooth and is slightly dished. The maximum thickness of the fragments is 31mm.

The sandstone material is soft and crumbly, poorly consolidated, and probably did not come from the immediate area.

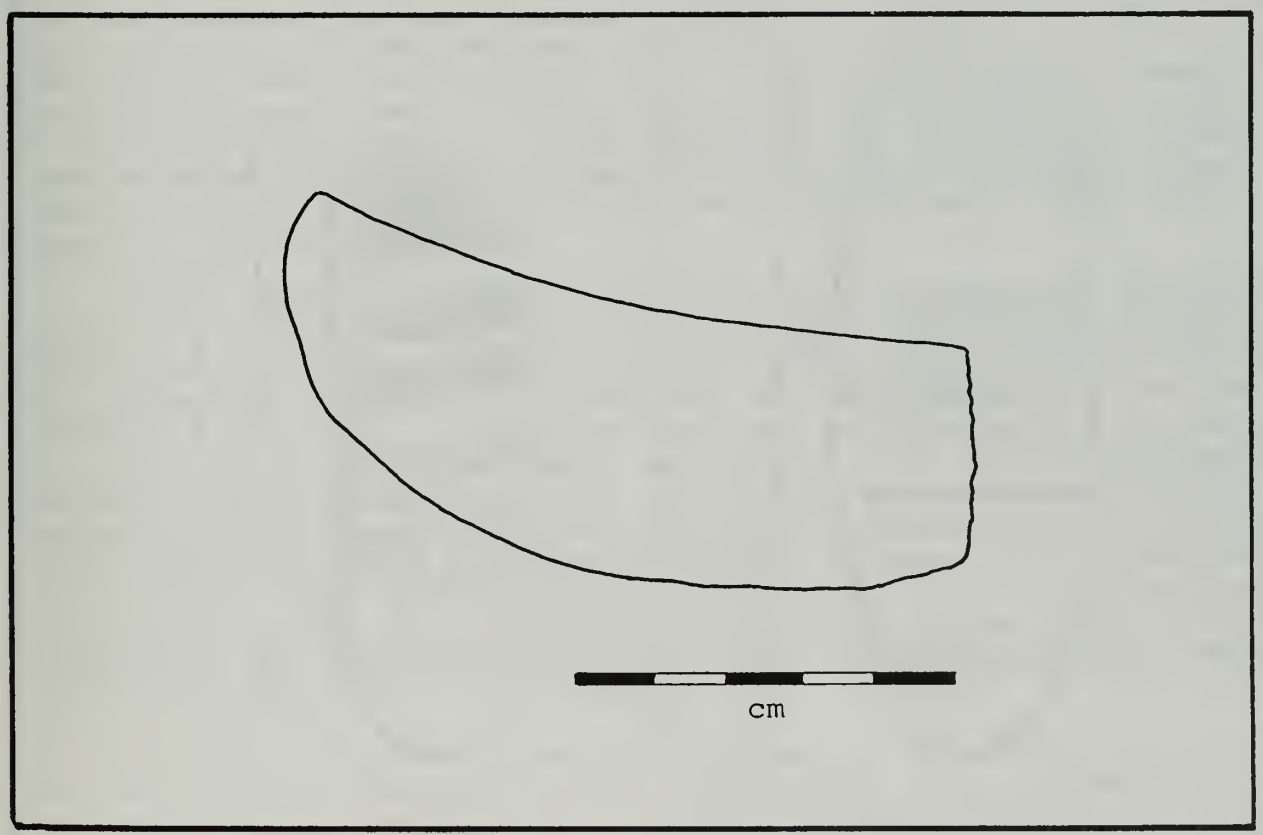

Figure 25. Cross-section of a large fragment of the sandstone plate from CA-SHA-2611/H.

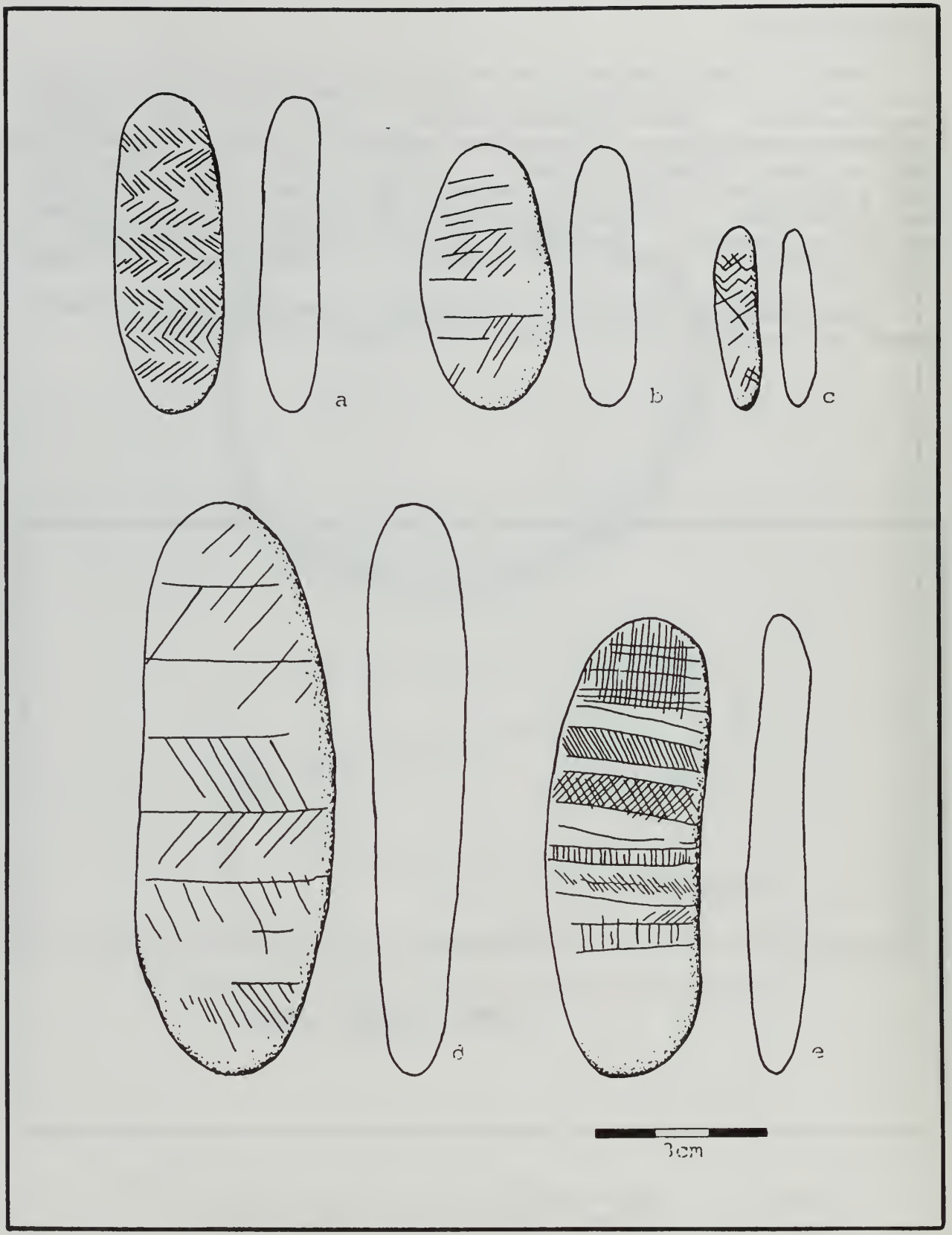

Figure 26. Incised stone artifacts from CA-SHA-2611/H.

Incised Stone Artifacts

A group of 13 metavolcanic artifacts, predominantly flat elongated pebbles, each contain a design of incised lines. The size range is fairly large, varying from 101mm in maximum length to a tiny 33mm. Two are fragments. Table B-16 provides sizes and proveniences for individual specimens.

Designs in most cases are not deeply incised and are not readily apparent on these dense metavolcanic stones. Patterns as shown in Figure 26 are emphasized more than what appears in reality. Virtually all incised designs are created from a series of straight lines. Patterns vary from an intricate herringbone or cross-hatched motif to a few simple parallel lines. Several combine two or more different design elements.

Artifact 102-1131, featuring one of the more complex designs, is completely covered on one face by a herringbone or stacked chevron pattern (Figure 26a). The reverse face contains a few parallel scratches. Specimens 102-983 and -1083, among the largest pieces, each has a series of parallel lines perpendicular to the length. In the former, several pairs of lines are infilled with a cross-hatched design or numerous vertical or oblique parallel lines (Figure 26e). The reverse face is nearly completely covered with incised lines which are less patterned. On the other specimen, the infilled fields between parallel lines feature sets of parallel oblique lines angled in different directions, in effect creating a large herringbone pattern divided by parallel lines (Figure 26d).

Three other specimens include a herringbone or chevron element. The most intricate, artifact 102-269, is fragmentary in all dimensions including thickness, the extant face of which is completely covered with a pattern of "stacked chevron series" (McGuire 1989:D.11). Alternate rows are infilled with tiny sets of lines parallel to the vertical direction of the herringbone pattern. Specimen 102-704, the smallest of the complete pebbles, contains numerous sets of oblique parallel lines, some of which form cross-hatched or herringbone designs (Figure 26c). Specimen 102-866 is a flat pebble, wider relative to length than any of the others. One face features a thick set of parallel lines oblique to the length axis. A "W" design along the opposite edge is the only other visible incising.

Several specimens contain what appear to be random patterns. Artifact 102-825 contains a set of parallel lines perpendicular to the length, irregularly crossed by sets of oblique lines (Figure 26b). Specimen 102-334 is similar, containing a set of lines parallel to the length which are crossed by two sets of oblique lines nearly perpendicular to each other. Specimen 102-1231, a fragment, also contains three sets of parallel lines which cross each other at oblique angles.

Specimen 102-445 is a long, narrow pebble containing a faint design at one end comprised primarily of a large number of closely spaced parallel lines arranged at an angle to the length axis. The lower edge of this pattern is bordered by four or more lines which meet the first set at oblique angles. A few, short parallel lines are visible on the reverse side.

Artifact 102-669 contains a series of six diagonal lines spaced at 3mm intervals over the length of one face. Specimen 102-1002 features a small incised area comprised of a series of short vertical parallel lines near one end.

Specimen 102-1232 has a minimal design area with a few parallel lines at one end, oblique to the length axis. This artifact is unique in containing a biconically drilled area just below the incised pattern. Although the drilling originates from both faces, the indentations are slightly off-set and do not meet, and thus no hole extends completely through the artifact.

One additional stone is described although it may be natural rather than artifactual. Specimen 102-1146, found at the 50-60cm level of S14-E13, is a flat pebble of soft andesitic stone. Nearly round at 26mm in both length and width and 7mm in thickness, this pebble features two or three scratches or incised lines on one edge. It is very unusual in that both faces contain slight thumbprint-sized indentations, both of which appear to have some ochre staining. If an artifact, this is of note in that a class of artifacts known ethnographically as Wintu fish charms have similar sized indentations. These artifacts, however are much larger and are usually made of a dense metavolcanic stone. They often feature numerous light scratches across the surface of the indentation.

Shaped Ochre

A number of chunks of ochre were collected from the site, much greater in size and quantity than would be expected to occur naturally in the soil. Similarly, the distribution within the midden is more limited than would be randomly accounted for, with a mean depth occurrence in Locus A of 33cm and a standard deviation of 18cm. Of 53 recorded ochre fragments, only one was collected from Locus B.

Chunks range from 64mm to less than 10mm in length. Most were noted but not collected. Streaks checked against the Munsell soil color chart are primarily in the yellowish-red (5YR 5/8 to 5YR 4/6) range.

Among the specimens collected from the site, one is a completely shaped artifact and several others appear to be use-modified. The former specimen (Cat. #102-227) has been formed

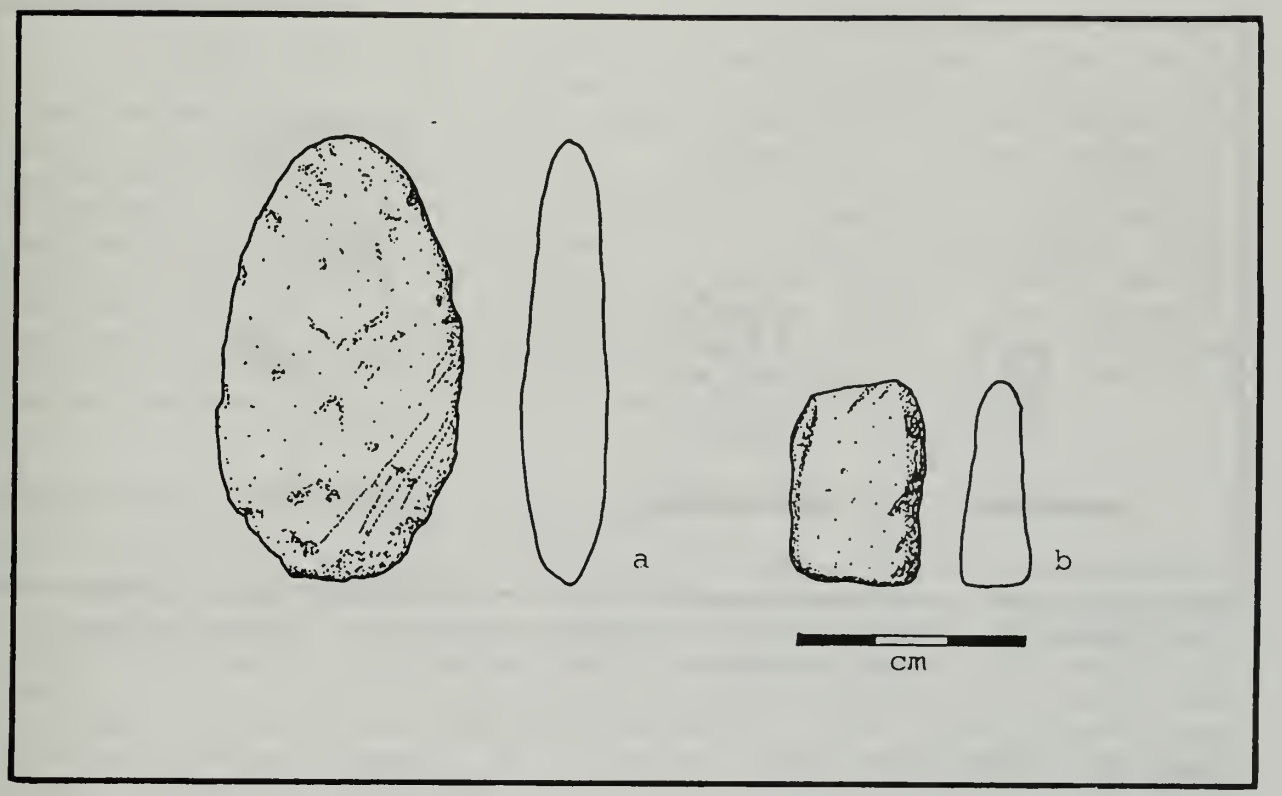

Figure 27. Shaped ochre from CA-SHA-2611/H.

into a wide foliate shape, slightly narrower at one end than the other (Figure 27a). It measures 58mm in length, 31mm in width, 12mm in thickness, and weighs 29.7 grams. Collected from the 10-20cm level of S8-E14, this artifact produces a streak with a Munsell value of 10YR 5/6, or strong brown.

Specimen 102-705, found in the 20-30cm level of S8-E15, has two parallel grooves, each about 2mm wide and 1mm deep, extending across one surface. This piece measures 64mm in length, 32mm in width, 31mm in thickness, and 41.5 grams in weight.

Several other ochre pieces have one or more flat surfaces which may have resulted from rubbing the ochre on a rough surface. Specimen 102-318, collected from the 20-30cm level of S9-E15, is sub-rectangular in plan with both faces very flat (Figure 27b). It measures 27mm by 19mm by 10mm and weighs 3.8 grams.

Specimen 102-32, recovered from the 20-30cm level of N0-E16, is flattened on one face, partially flattened on the reverse face, and is squared on two edges. It measures 21mm by 18mm by 11mm, weighs 2.9 grams, and produces a strong brown streak of 7.5YR 5/8.

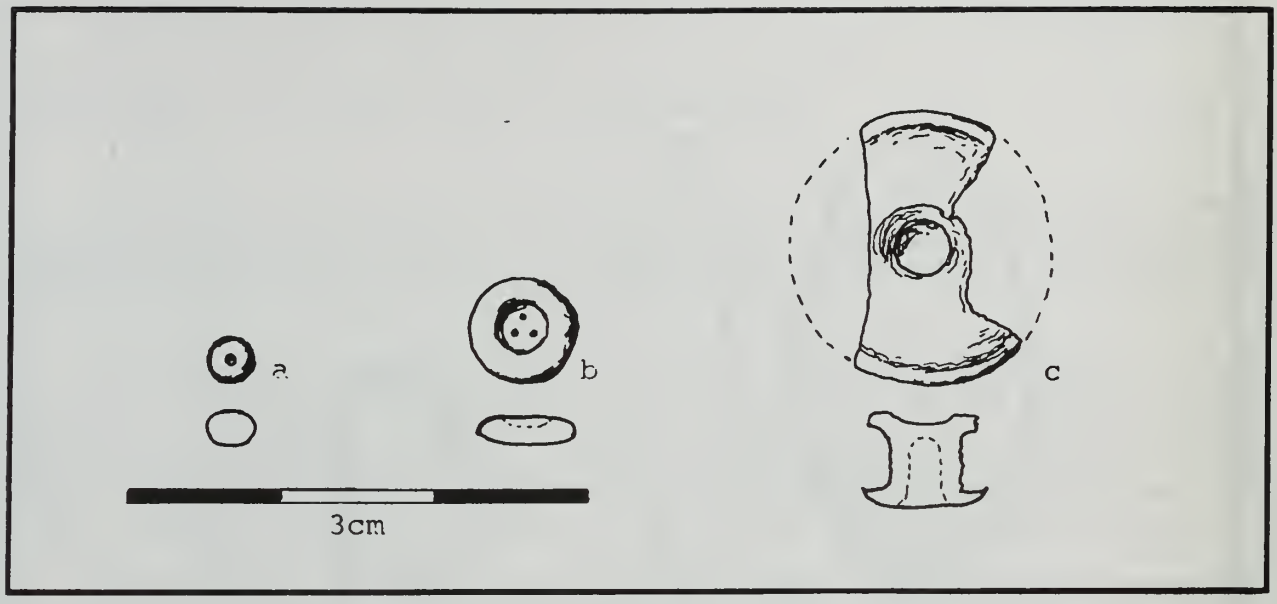

Figure 28. Glass bead, porcelain button and metal button from CA-SHA-2611/H.

Glass Bead and Glass Ball

A single bead of opaque white glass (Cat. #102-901) was recovered from the 10-20cm level of S10-E15. Simple in construction, oblate-spheroid in shape (Figure 28a), it measures 3mm in diameter by 2mm in height. The hole is approximately 1mm in diameter. This bead, a type of Hudson's Bay trade bead which generally dates after 1870, is the most common type found in Shasta County archaeological sites (Ritter 1991).

A ball of clear glass (210-921) was found in the 30-40cm level of the same unit. Measuring 3mm in diameter, it resembles a bead but lacks a hole.

Buttons

Two buttons were recovered during the excavations. A white porcelain button (Cat. #102-51) was found in the 0-10cm level of S1-E15. It measures 7mm in diameter and has a 3mm-diameter indentation in the center of one face for the holes. The three holes are arranged in a triangular pattern (Figure 28b).

A metal button fragment (102-589) was collected from the 10-20cm level of Unit B-2. It appears to be a portion of a Levi-jeans button, 19mm in diameter, with a brad which extended through the fabric (Figure 28c).

Crockery

A single 23mm-long fragment of white crockery (Cat. #102-757) was found in the 10-20cm level of S10-E12 in Locus A and five larger pieces (102-1265) were collected from the surface of Locus B northwest of Unit B-1. Fragments of latter group fit together to form portions of two dinner plates, 9 5/8 inches in diameter. Both are plain white with no pattern. The back is marked "Thomas Hughes, Burslem." Although of a similar size, they differ slightly in shape as one has a slight bulge around the exterior edge which is lacking in the other. The latter is incised with a "76" above the name on the back. This ironstone ware was produced in Staffordshire, England, for the American market between 1860 and 1894 (Praetzellis et al 1983:44).

Glass Bottle and Window Glass Fragments

Of the 170 fragments of glass collected through excavation, 92 pieces were determined to be flaking debris or were modified through flaking. Many more of the glass fragments probably were shatter or source material for the manufacture of glass artifacts. Sizes of the fragments are predominantly less than 10mm or 20mm, although two pieces of an 8mm to 10mm-thick black glass bottle and one fragment of a 5mm-thick olive bottle are about 60mm in greatest dimension.

A comparison of the recognized debitage with fragments that are not clearly flaked reveals that, with the exception of 15 pieces of a recent amber bottle from S9-E15 and two fragments of a clear glass jar in S21-E14, the proportions of flaked glass is similar to that for all glass. Shades of olive green, but particularly the thick black glass, form 70% of all glass and 78% of flaked glass. Amber-colored glass constitutes 12% of all glass and 11% of the flaked glass. Proportions for clear glass are 10% and 7%, respectively, and that for turquoise glass are 8% and 4%, respectively.

The major difference noted between flaked and non-flaked glass was that thin olive green bottle fragments were less likely than other types to show signs of flaking. Thin, flat window glass, however, was often modified on the edge. This use of materials, along with a lack of bottle necks and bases, suggests that nearly all of the glass found at the site was imported in fragmentary form to use in making flaked-glass artifacts. The presence of window glass does not necessarily mean that a structure with glass windows was present.

No amethyst glass was found at the site. While amber, olive, clear, and turquoise glass have long histories of use, the very dark olive green glass called black glass was most commonly used between 1840 and 1880 (Rock 1981:17).

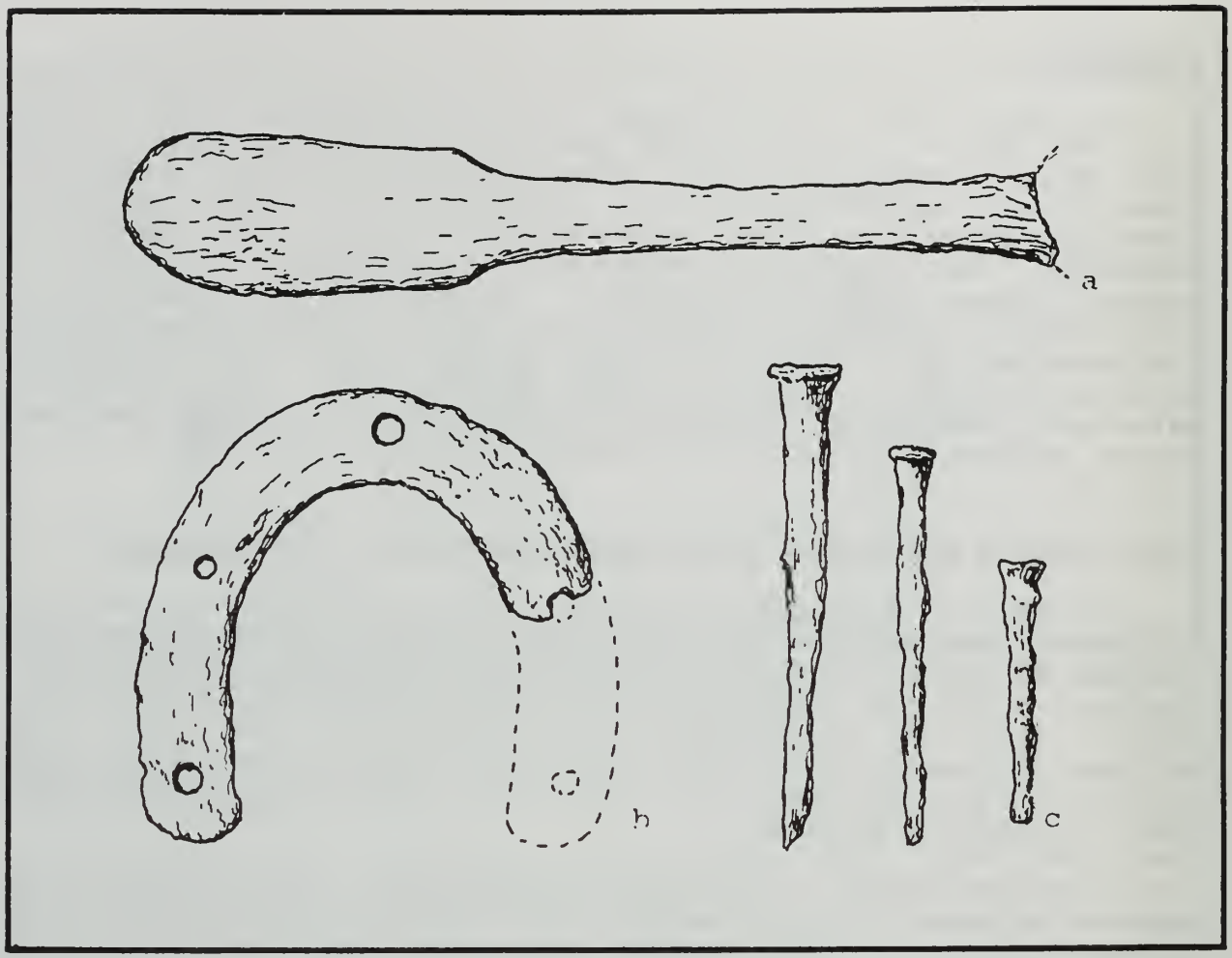

Figure 29. Metal artifacts from CA-SHA-2611/H; handle of a table utensil (top), boot heel (lower left), and common cut nails.

Table Utensil

The handle of a piece of tableware (102-763), probably a fork, was found in the 20-30cm level of S10-E12. The handle measures 4 1/2 inches in length, 3/8 inch in width near the broken end, and broadens to 13/16 inch at the end (Figure 29a). The piece is very rusty and no design is apparent in the metal. The shape is like that called the fiddleback pattern. Similar utensils have been found in another 19th century Native American site (Woolfenden 1970).

Boot Fragment

A thin metal fragment (102-596) found in the 20-30cm level of B-2 appears to have been part of boot heel. It is a horse-shoe-shaped flat metal strip, 2 5/8 inches wide, which forms a

heel shape approximately 2 1/2 inches across. The rusty metal is about 2mm in thickness. It is broken but, if symmetrical, had five 1/8 inch-diameter holes for attachment to the boot heel (Figure 29b).

Common Cut Nails

Sixteen common cut nails, often referred to as square nails and generally used prior to 1900, are among the catalogued collection. Most are in poor condition, very rusty with many broken. Sizes, however, can be estimated by the measurements of the heads and shafts.

Two are 12ds (3 inches long) as illustrated in Kimbark's catalogue; two are 10ds (2 3/4 inches long) and three are 9ds (2 1/2 inches). Another six fragments are probably in the same size range. One, along with another fragment, is a 7d (2 inches long) and one is a 4d (1 3/8 inches long). Sizes are mixed by provenience.

Eight common cut nails were recovered from the top 30cm of Locus B, four from B-1, three from B-2, and one from B-3. The distribution of the eight examples from Locus A, like that of the glass fragments, appears to be the product of a major disturbance to the site (see Table A-7 for the distribution of all artifacts of historic age). One nail was found in the 0-10cm level of S21-E14, two came from the top two levels of S10-E14, and five from S10-E12 in the following depths: one from the 0-10cm level, one from the 30-40cm level, one from the 50-60cm level, and two from the 90-100cm level.

Wire Nails, Screws, and Washers

All 21 wire nails were collected from the top 10cm of Locus A and, with the exception of one from S9-E17, all were from S14- units with the majority in S14-E17 at the eastern end of the line.

All are unbroken and easily measurable. There is one 20d (4 inches long) and one 16d (3 5/8 inches long); nine are in the 7d to 9d range (2 3/4 to 2 1/4 inches), seven are 6ds (2 inches), and three are in the 3d to 4d range (1 1/8 to 1 5/8 inches). The distribution by size is shown in Table 11.

Two screws were also collected from the 0-10cm level of S14-E12. Both are 7/8 inches long. One is a sheet metal screw with an 8mm-diameter head and threads the full length of the shaft. The other is a wood screw with a 6mm-diameter head and threads only on the lower 1/2 inch of the shaft.

TABLE 11

Distribution of Wire Nails by Size
all are from the 0-10cm level of the site

SIZE	S9-E17	S14-E11	S14-E12	S14-E13	S14-E16	S14-E17
4"					X	
3 5/8"					X	
2 3/4"			X	X	X	
2 1/2"		X				XXXX
2 1/4"						X
2"	X				XX	XXXX
1 5/8"						X
1 1/8"				XX		

Two washers were also collected from the site. One, from the 0-10cm level of S14-E11, is a lock washer, 5/8 inch in diameter with a 5/16 inch-diameter center, and 3mm in thickness. The other, found in the 0-10cm level of B1, is much thinner and appears much older. It is 9/16 inch in diameter with a 1/4 inch hole and is less than 1mm thick.

Miscellaneous Metal Artifacts

Other historic metal artifacts from the site include an iron ring, 2 segments of wire, a spice can lid, a staple, 10 small fragments of thin metal which were probably parts of tin cans, and 18 rifle shells.

The iron ring is very rusty, made of a 3mm-thick band of metal 1/2 inch wide. The ring is 1 7/8 inches in diameter. It was found in the 0-10cm level of B-1. Its use is not known.

The spice can lid, found in the 0-10cm level of S14-E11, measures 2 1/2 inches in length and 1 1/16 inches in width. It has openings on both ends and is of a type common 50 years ago.

The single staple, which is relatively unrusted, was recovered from the 20-30cm level of S10-E12. The U-shaped form measures 7/8 inch in length and 3/8 inch across.

A 3 1/2 inch segment of wire, 3mm thick, was found in the 0-10cm level of B2. The other piece, about 2 inches long and less than 1mm in thickness, was recovered from the 0-10cm level of S14-E16.

The 10 probable fragments of tin cans are very rusty and very disintegrated. The largest fragment is just over 1 inch in maximum dimension. All are of a similar thickness, between 1mm and 2mm. Five fragments were found in the 20-30cm level of B-2, one came from the 0-10cm level of S21-E14, and four were recovered from the 90-100cm level of S10-E12.

All but one of the rifle shells are 22-caliber, found in the 0-10cm levels of Locus A, predominantly the S14 line of units, and probably post-date all other described artifactual material. The exception, a rim-fired shell found in the 10-20cm level of B-3, appears to be a more unusual type. It measures 3/4 inch in length and the base is just under 1/2 inch in diameter. It is unmarked.

Faunal Fragments

The faunal assemblage collected through excavation is minimal, consisting of 157 tiny, highly eroded fragments (Table A-5). With a single exception, all are under 1g in weight. The exception, an unburned, unmodified fragment recovered from the 0-10cm level of B-1, appears recent and may be part of the historic component at Locus B.

The faunal materials have not been analyzed and is it not likely that any can be identified other than as large-to-medium sized mammal. Smaller mammal, bird, or fish bone which may once have been present, would probably not have survived. Many of the faunal fragments have been burned, indicating their association with the cultural deposit.

Fire-Affected Rock

Rock fragments assumed to be the result of fracturing by fire were weighed by unit and level and then discarded at the site. Table A-6 provides the results.

TABLE 12

Chronological Determinants at CA-SHA-2611

DATE	DIAGNOSTIC ARTIFACTS	OBSIDIAN HYDRATION	RADIOCARBON DATING
post-100 BP	wire nails		
100-150 BP	common cut nails ironstone black glass trade bead glass artifacts		
150-1000 BP	Gunther points triangular points hopper mortars and pestles	1.9-3.0 (GF) 0.9-1.3 (T)	
1000-3000 BP	Clikapudi points notched-pebble net-weights	2.9-4.1 (GF) 1.5-3.1 (T)	1720 ± 75 BP 1760 ± 70 BP
2000-4000 BP	McKee Unifaces incised stones	3.5-5.1 (GF)	

GF Grasshopper Flat obsidian
T Tuscan obsidian

CONCLUSIONS

The Shasta College field archaeology class devoted the 1997 and 1998 field seasons to the archaeological testing of CA-SHA-2611/H on Moccasin Creek. The site was recorded as containing two loci, Locus A south of the confluence of Moccasin Creek and the Sacramento River and Locus B on the north side. The excavation of 18.7 cubic meters of midden in 25 1m square units resulted in an inventory of 8505 artifacts, debitage, and other cultural remains. Five features were exposed and formally described, and samples of charcoal and soil were collected for analyses. These materials and data can now be applied to areal research objectives.

The major objectives of the field investigation were to determine what elements are present at the site that contribute knowledge to areal cultural history, and to assist the Bureau of Land Management and Bureau of Reclamation in determining the eligibility of the site for the National Register of Historic Places. Research questions were divided into three general classifications: cultural chronology, functional uses of the site or site components, and social patterns.

Cultural Chronology

Artifactual materials and other data suggest a very complex cultural history at the site, covering a period of several thousand years. Chronological determinants include temporally diagnostic artifacts, obsidian hydration values, and radiocarbon dating (see Table 12).

Although only minimal charcoal was recovered from most units, two units produced charcoal samples adequate for radiocarbon analysis. A sample from the 80-90cm level of S14-E8 in Locus A and another from the base of B-1 in Locus B provided surprisingly similar dates of 1760 $\pm$ 70 BP and 1720 $\pm$ 75 BP. Stratigraphy alone suggests that these dates should correlate with the initial human occupation of the site. However, based on other data, this does not seem to be the case. It appears that both features may have been excavated into the preexisting soil strata. This is further discussed in a later section.

Wire nails generally date after 1900 and common cut nails prior to that date. Although both were found primarily in the top 10cm at Locus A, only common cut nails were found in Locus B and in the possible ditch disturbance in the S10 units in Locus A. The condition of the common cut nails, very rusty and disintegrated, also indicate a much earlier date for these than for the wire nails. Other pre-1900 historic time markers include the

ironstone plates with a manufacturing date prior to 1894, black glass which generally dates prior to 1880, and the glass trade bead, most commonly dated between 1870 and 1900.

Projectile points are the most common temporally sensitive artifact type in most prehistoric sites in northern California, and Moccasin Creek is no exception. Gunther Series points and triangular points usually date between 1000 BP and 100 BP, and a glass example of each places some of them at the end of this period. The single Desert Side-Notched point probably dates within the past 500 years. The majority of points collected from the site fall into two temporal types: Clikapudi Notched points, generally dated around 1000 to 3000 years before present, and McKee Unifaces, dated between 2000 and 4000 years BP.

Hopper basket mortars and hopper mortar pestles have not been found in Shasta County sites of more than 1000 years in age. Mortars found in older contexts are block or bowl mortars, and the matching pestles are not the flat-ended variety associated with hopper basket mortars (e.g. Clewett and Sundahl 1982a:27). Notched-pebble net-weights are usually found in association with Clikapudi Notched points and dated to the same time frame (e.g. Clewett and Sundahl 1982a:30; 1982b:33). Incised stone artifacts are usually associated with assemblages which also contain McKee Unifaces (e.g. Edwards 1968; Basgall and Hildebrandt 1989:456).

Eighty-eight obsidian artifacts were measured for hydration band thickness. A set of 60 pieces of debitage and modified pieces were taken from a stratigraphic column in S8-E18 and another 28 were projectile points. Those from the stratigraphic sample average between 3.40 and 4.41 microns per level and do not indicate a clear stratigraphic change from top to bottom; although the means per level increase for each level from the surface to 30cm, means below 30cm decrease (see Table 5). This may indicate either that a single component is present throughout or that there is disturbance to the strata, or both.

Since the deposit is characterized by both McKee Unifaces and Clikapudi Notched points, the former type usually dated at 2000 to 4000 years old and the latter at 1000 to 3000 years, it allows an overlap of time when both may have been in use. Because of the mixing of stratigraphy at the Moccasin Creek site, the challenge was to determine whether this was the case or whether the two point types represent distinct occupations. The attempt to use obsidian hydration analysis in making this determination suggests a temporal difference, but was not entirely successful because, although the McKee Unifaces are nearly entirely made of Grasshopper Flat obsidian, Tuscan obsidian was the source for nearly all of the Clikapudi Notched points. This fact alone, however, suggests separate populations or temporal distinctions.

Hydration measurements on projectile points provide the following results: values for Grasshopper Flat obsidian average 2.45 microns on Gunther points, 3.50 microns on Clikapudi Series points, and 4.31 microns on McKee Unifaces. Only the last had a large sample of Grasshopper Flat obsidian. Mean values on Tuscan obsidian were 1.1 microns on Gunther Series points and 2.32 microns on Clikapudi points. No McKee Unifaces of Tuscan obsidian were submitted for hydration, and few, if any, are present at the site.

By pairing numerous hydration values on Grasshopper Flat obsidian with radiocarbon dates for sites in the Sacramento River Canyon, researchers devised a formula for converting micron values into dates before present (Basgall and Hildebrandt 1989: 196). When corrected for a 2.3 degree Centigrade temperature difference, the formula produces the following dates for the Moccasin Creek site. Gunther Series points range from 947 BP to 1966 BP; Clikapudi Series pints range from 1966 BP to 3497 BP with a mean of 2515 BP; and McKee Unifaces range from 2401 BP to 6443 BP with a mean of 3510 BP. Narrowing the range of the McKee Unifaces to one standard deviation around the mean provides a temporal range of 2549 BP to 4580 BP.

Economic Use Patterns

The economic focus of the site inhabitants can be inferred through the analysis of the cultural assemblage, related features, and other auxiliary studies. The first task at Moccasin Creek is to organize the artifacts into assemblages. The wire nails appear to be related to the cabin remains located on the southern edge of the site. The function appears to have been residential, possibly related to the construction of Shasta Dam. It seems unlikely that this occupation could predate 1938 when the dam project began as the dirt access road to the site originates at the beltline road. The beltline transported cobbles, sand and gravel for use in the concrete to build the dam.

Except for these most recent artifacts, stratigraphy at the site is relatively poor. The surface of Locus A appears to have been flattened at the time the dirt road was constructed into the site, with strata from the more eastern units pushed off the eastern and western edges of the site. Thus, the westernmost units are much deeper and strata at the 90-100cm level in these units may be comparable to the 40-50cm level in some of the more eastern units. The disturbance in the S10 units, with glass fragments and common cut nails found to the base of the midden, makes it necessary to eliminate these from any discussion of stratigraphy of prehistoric cultural remains, but dates the construction of this disturbance.

All of the late 19th Century artifacts could date to a single occupation, but in view of the two radically different

economic industries, this seems unlikely. The presence of glass projectile points, glass debitage, and a glass trade bead indicates the presence of a Native American population while the mining features argue for a Euro-American use of the site. The Native American occupation of Locus A appears to have been short-term residential, possibly a seasonal base for the continuation of traditional Native hunting practices.

The use of Locus A for mining activities appears industrial with a possible residential occupation at Locus B. Locus A may have featured a stamp mill uphill to the south. No evidence of this has been found, but its location may have been erased by the later cabin construction. Similarly, no mines or tailings have been found in the immediate area.

Iron stamp mills made their appearance in Shasta County gold mining as early as 1852 (Lydon and O'Brien 1974:41), although they were very expensive and usually associated with richly productive mines. It seems possible, however, that later mining enterprises may have been able to cheaply purchase or scavenge used stamp assemblies from earlier, exhausted mines. In using stamp mills to pulverize gold-bearing ore, a horizontal cam with heavy vertical bars of wood or iron was continuously turned, usually by a water wheel or steam engine, raising and lowering a series of vertical bars. The ore was washed by flume through the stamps where it was crushed and then carried away for amalgamation, usually done with mercury (Dillon 1995:124-127). Some ores with very fine gold were treated with sodium cyanide or potassium cyanide, dissolving the gold, which was then precipitated by zinc dust, a process adopted after 1890.

The fine clay at Moccasin Creek was washed into a settlement pond which was excavated for a distance of five or six meters into the southern edge of the prehistoric midden. Its depth is unknown, but it is greater than 40cm. The clay settled out in thin strata or varves, each 2-3mm in thickness. A test of a sample of the clay revealed traces of mercury, lead and zinc, none of which would be expected to occur naturally in these soils. Some overflow carried a thin layer of clay over much of the site where it settled in depressions, all later covered by reddish soil which probably washed down the dirt road or was deposited by a bulldozer during the more recent occupation.

The presumed ditch, revealed in the excavation of all S10 units to a maximum depth of one meter, probably was related to this activity, and most likely was the continuation of the extant ditch which follows the west bank of Moccasin Creek for some distance southward and uphill from the site. The common cut nails, found primarily in the S10 units, may have been part of a flume or stamp mill, or could possibly date to the Native American occupation, although the former seems more likely. Some probable habitation of Locus B, concurrent with the mining activity, is evidenced in the form of common cut nails, crockery, a

Levi jeans-type button, and a fragment of a boot.

There is a relatively thin deposit of artifacts, Gunther Series points of obsidian, hopper mortars, and pestles, which are generally dated within the last 1000 years of prehistoric time. It is conceivable that all of these relate to a short-term historic occupation by Wintu people after the late-19th Century influx of Euro-Americans displaced them from their preferred locations. Obsidian hydration suggests some antiquity for the Gunther Series points, but does not reveal any obsidian debitage which would be related to this component. Since much of the stratum dating to this occupation has apparently been destroyed, it is difficult to determine the amount, if any, of late prehistoric use.

A substantial prehistoric cultural deposit is present in Locus A, primarily between the depths of 20cm and 50cm in the eastern units and up to 90cm or 100cm in depth in the western units. Included are stone features and an assemblage of groundstone, cobble spalls, cores and flake tools of metavolcanic material, hammerstones, and projectile points. Notched-pebble net-weights, incised pebbles, and a sandstone dish were also found. In an attempt to separate these into assemblages, mean depths for selected artifact types and classes were calculated, revealing the following (see Table 13). The Clikapudi Notched points have a mean depth of 37.5cm in Locus A, higher than the average midden depth of 39cm, while McKee Unifaces have a mean depth of 44.1cm. Manos and incised stones have mean depths of 53cm while net-weights and ochre artifacts and fragments have mean depths of 23cm and 33cm, respectively. This suggests assemblage associations between McKee Unifaces, manos and incised stones in a lower component and Clikapudi Notched points, net-weights, and the use of ochre in a higher component. Millingstones, spalls and foliate points, however, which might be expected to belong to the lower component, have mean depths of 36.1cm, 36cm and 33.3cm, respectively, making them more numerous in the upper component levels. The millingstones were largely found within a single feature at the 30-40cm level, influencing their average distribution. Three manos and one net-weight show ochre-staining, and may belong to the assemblage of which ochre is a part, and yet all three manos were found in features associated with the earlier component. Of interest, edge-modified flakes of metavolcanic material, cobble tools, and hammerstones have lower means, suggesting that they were more numerous and more important during the occupation attributed to the lower component.

The frequency of fire-affected rock is greater in the upper levels than in the lower levels (see Table A-6) and also may be associated with the later of the two components. Major exceptions in this distribution are the two features which produced radiocarbon dates; although located in lower levels, both contained relatively large quantities of fire-affected rock. Pro-

TABLE 13

Mean Depths and Standard Deviations for Selected Artifact Classes arranged by depths in centimeters in Locus A

ARTIFACT TYPE/CLASS	LOCUS A NO.	LOCUS A MEAN	LOCUS A S.D.	LOCUS B NO.	LOCUS B MEAN	LOCUS B S.D
mortars	1	5.0				
net-weights	5	23.0	10.9	1	5.0	
pestles	2	30.0		1	55.0	
foliate points	9	32.8	16.4	1	85.0	
ochre	24	33.3	17.8			
millingstones	9	36.1	20.9	1	35.0	
spalls	71	36.1	23.0	5	59.0	33.6
Clikapudi points	12	37.5	23.5	2	80.0	
midden depth		39.0			51.7	
hammerstones	36	40.8	24.3	7	67.9	29.8
McKee Unifaces	32	44.1	20.7	1	85.0	
cobble tools	74	46.1	24.2	10	42.0	29.0
edge-modified flakes	100	49.8	25.7	22	57.7	24.3
manos	25	53.0	24.2	3	68.3	
incised stone	13	53.5	26.0			

tein residue analysis on a fire-affected rock recovered from one of these features displayed the presence of bear blood. The amounts of fire-affected rock in kilograms per volume of midden are comparable to those found in CA-SHA-992, a Sacramento River site in Redding which contained a similar assemblage of Clikapudi points and net-weights, but are far smaller than frequencies found in CA-SHA-266, a Redding-area Shasta Complex site dating within the last 1000 years (Clewett and Sundahl 1982a:Table 11).

In summary, it appears that the prehistoric levels at the Moccasin Creek site, primarily found below 20cm in depth, represents two separate occupations. The later of these two early components, that represented by Clikapudi points, appears to have less total usage of the site as estimated by numbers of artifacts than the earlier component. Although mortars, pestles, manos and millingstones all may have been associated with this component, none clearly are. The economic focus appears to have been hunting with bows and arrows and fishing with the use of notched-pebble net-weights and anchors, and an extensive use of stones in basketry cooking, earth ovens, or hearths possibly used in cooking salmon, or a combination of these. Several Clikapudi Notched points, tested for protein residues, revealed the presence of deer, rabbit and bovine proteins (see Table 7). Rabbit protein can result from the use of rabbit sinew in hafting points. The bovine protein, cow or bison, is inexplicable and may be an error. Faunal materials are minimal in the cultural strata and, given present methods of analysis, contribute little to furthering knowledge of site use. The nearly complete lack of freshwater mussel shell may indicate that this resource was not used or may reflect poor preservation.

The artifactual evidence for fishing, the fairly limited range of other artifacts, the use of Tuscan obsidian from the Tuscan formation located to the east, and the relative lack of debitage from the Tuscan source suggest a seasonal occupation with an emphasis on riverine resources. Although no seasonal determinants were found, river resources are most abundant in the fall and spring. The occupants may have spent other seasons in the foothill country to the east where Tuscan obsidian is readily available.

The earliest component, that associated with the McKee Unifaces, appears to represent the heaviest cultural use of the site, resulting in the largest amount of cultural debris. Several features, Features 1 and 4 and an unrecorded feature at the base of S10-E12, contained numerous manos and millingstones. Protein residue analyses conducted on a mano and a millingstone fragment both tested positive for pine, and the milling equipment was probably used in the processing of nuts from the grey pine.

Feature 1 presents the appearance of a cooking feature (see Figure 6) but no charcoal was found in association. Many well-made metavolcanic flake tools and cobble spalls were found with

these features and with Feature 2, located just above bedrock in S1-E15. Fire-affected rock is poorly represented in the lower levels of the site, and the use of baking ovens and basketry cooking may not have been techniques used by the earliest people.

It was hypothesized early in this project that the McKee Unifaces may have been used in fishing, but protein residue analyses on four examples were negative for everything but rabbit protein, and there is no support for this hypothesis. Protein residue analyses on ten McKee Unifaces from CA-SHA-475 on Squaw Creek found one specimen to be positive for deer blood, one for elk, and one for duck blood. The other seven were negative. Three of six specimens from CA-SHA 476 in the Sacramento River canyon returned positive results, one for deer protein, one for dog, and one for both bear and Rodentia (beaver, porcupine, etc.; Wheeler 1994:48). Wheeler (1994:51) conducted a microscopic use-wear analysis on 337 McKee Unifaces from northern California sites in an attempt to determine their function. She concluded that most probably served as projectile points although 8.3% of these artifacts exhibited evidence of use as scrapers. The wide variety of protein residues found on McKee Unifaces indicates that this artifact served as a general, all-purpose projectile point at Moccasin Creek.

This occupation may have been seasonal; the extensive use of pine nuts suggests a fall or winter occupation. The McKee Unifaces indicate a hunting emphasis with prey probably medium-sized to large mammals. No evidence was found for fishing or other use

TABLE 14

Frequencies of Artifact Classes by Locus
1/4-inch mesh
Expressed as Numbers per Cubic Meter of Excavated Midden

ARTIFACT CLASS	LOCUS A	LOCUS B
total cultural materials	431.0	136.3
lithic artifacts	39.8	21.6
debitage-obsidian	174.1	31.9
debitage-metavolcanic	217.0	82.8
modified flakes-obsidian	3.9	0.9
modified flakes-metavolcanic	10.5	6.9
spalls	4.7	1.6
cores	7.4	5.3
projectile points	6.2	1.6
ground stone	2.8	1.7

of river resources. Both obsidian hydration values on debitage and the fact that nearly all of the debitage appears to be from the Grasshopper Flat source suggests that most of the obsidian reduction at the site relates to this occupation, indicating a local artifact-making industry. Obsidian may have been imported in the form of blades and other preforms as no cores or large bifaces were found.

With the possible exception of fire affected rock, Locus A contains far greater frequencies of stone artifacts and debitage per volume of excavated midden than does Locus B (see Table 14), suggesting that Locus B saw only about one-third as much use as Locus A. Given this, however, there is considerable variation in the proportions of cultural materials. Using Locus A as a standard, Locus B contains much greater percentages of metavolcanic core tools, cores, flake tools, and ground stone relative to obsidian artifacts and debitage. This may indicate that Locus B, at least for a portion of its use, was a special activity area related to the occupation of Locus A.

Social Patterning

Little information was collected which would provide illumination on the social aspects of the historic occupations. The latest component, dated at ca. 1940, largely lies outside of the prehistoric midden and was not investigated. And relatively little social-related data was collected for the late-19th Century occupation. Both were part of the dominant Euro-American society, but perhaps were transitory habitations to extract economic values but lacking a permanent family life at the site. Similarly, the historic Native American occupation leaves little evidence as to social aspects.

The late prehistoric occupation also is not well represented, due at least in part to historic disturbance of the midden. Presumably complete families occupied the site, but no evidence remains of structures or other features which suggest a permanent, year-round occupation. The cultural assemblage attributed to this component is typical of the Shasta Complex or Redding Aspect of the Augustine Pattern, generally associated with the Wintu occupation in northern California.

Most of the surviving information relates to the two earliest prehistoric habitations. Clues which can yield information regarding social patterns include exotic source materials and unique artifacts which have no clear economic function. The obsidian material used in making the McKee Unifaces is traced to the Grasshopper Flat obsidian source in the Medicine Lake Highlands, suggesting either travel routes in that direction or trade with peoples who had access to that source. This contrasts with the Clikapudi Notched point component in which obsidian from the

much closer Tuscan source was by far the predominant obsidian. This distinction may indicate that two entirely different cultural groups were present or simply means that territories became more circumscribed with time, limiting the available territory and emphasizing a use of more local materials.

The use of incised pebbles by the earliest group is another characteristic shared with peoples to the north and west but lacking to the south. Large numbers of incised stone artifacts have been found in the Sacramento River canyon some 19 miles to the north of Moccasin Creek (McGuire 1989) and in French Gulch 11 miles to the west (Edwards 1968). In both cases the designs include a range of parallel lines, cross-hatching, and chevrons combined in many different ways, with many similarities to those from Moccasin Creek. In concluding an analysis of the incised stone from three sites in the Sacramento River Canyon, McGuire (1989:D.39-D.43) proposes that the designs represent specific social groups, and the artifacts were amulets carried or worn by members of a group to represent group affiliation.

While some of the Moccasin Creek examples have intricate designs that may lend themselves to such an hypothesis, others have far more random incising which gives the impression that the act of scratching the stone was more important than the resulting design. None are drilled such that they can be worn as pendants. If these are group identifiers, more analysis is needed to determine the relationship among the incised stone artifacts from the Sacramento River Canyon, Moccasin Creek, and from CA-SHA-288 in French Gulch. This last collection, reportedly curated at the Redding Museum, has never been fully described, and perhaps future analyses can provide further information about the significance of the incised stone artifacts and the social and cultural relationships between peoples of these different areas.

Another class of cultural materials which has no apparent economic value is the relatively large numbers of ochre chunks, some of which show modification or use. The mean depth of these materials points to an association with the Clikapudi Notched point component. Ochre stains were noted on a number of artifacts including manos and a net-weight, but the purpose, decorative or magical, is unknown.

Both of these components, which presumably are pre-Wintu, may represent occupations by ethnic groups speaking languages of the Hokan stock. The McKee Uniface people, with their use of Grasshopper Flat obsidian from the Medicine Lake Highlands and incised stone trait shared with the upper Sacramento River canyon, may have been a population affiliated with the Shastan-speaking Okwanuchu. The Clikapudi point people, with an emphasis on obsidian from the Tuscan source which lies to the east, may have been an early occupation by the Yana. Both probably traveled in small family groups as the size of Moccasin Creek site would accommodate only a limited number of people.

Significance of the Moccasin Creek Site

Possibly as many as six different cultural occupations of varying lengths and intensity took place at the Moccasin Creek site (Table 15), some with considerable significance to the study of the human past. Human occupation may have begun as early as 4000 years ago. Although earlier archaeological remains have been found at higher elevations such as at Squaw Creek (Clewett and Sundahl 1983) and the upper Sacramento River canyon (Basgall and Hildebrandt 1989), none has been found along the river south of these locations, perhaps because the pre-4000 B.P. valley was not hospitable, or simply because the river has erased their existence.

The earliest occupation at Moccasin Creek was by small family groups who hunted with atlatls tipped with McKee Unifaces and ground grey pine nuts with manos and millingstones. They brought obsidian from the Grasshopper Flat source to the site and manufactured a variety of tools. Many large metavolcanic flakes were modified into a variety of scraping and cutting tools, and river cobbles were reduced to make wide-angled chopping and scraping tools. Many flaked stone and ground stone tools were cached, presumably for reuse upon return.

These people, who shared an emphasis on Grasshopper Flat obsidian and incised stone artifacts with others in the upper Sacramento River canyon, may have been members of the Okwanuchu, a Hokan-speaking group with an ethnographic homeland on the upper Sacramento. Annual migrations may have taken the Moccasin Creek people northward along the river corridor to trade for obsidian or to hunt and collect plant foods at higher elevations.

The Upper Sacramento River Canyon project (Basgall and Hildebrandt 1989), with large excavated samples from four archaeological sites, extensive auxiliary analyses, and creative explanations of area prehistory, has become a standard against which most northern California sites are now measured. The Moccasin Creek site shares many attributes with the Sacramento River canyon, but also has major differences. The earliest component at Moccasin Creek shares McKee Unifaces, manos, millingstones, and incised stones with the Pollard Flat phase found in the canyon, but lacks the Squaw Creek Contracting Stem points which help define the phase. This could represent a temporal shift, for instance the Squaw Creek Contracting Stem points belonging only to the earlier part of this phase and McKee Unifaces to the later part; a functional difference in sites; or a cultural difference whereby a separate group of people at Moccasin Creek used McKee Unifaces but not Squaw Creek Contracting Stem points.

There are no data which suggest functional or cultural differences, but a case could be made for temporal variations based on the projectile point stratigraphic sequence and hydra-

TABLE 15

Summary of Cultural Phases at the Moccasin Creek Site

DATE	LOCATION	CHARACTERISTICS
ca. 1940	Locus A 0-10cm	board cabin, wire nails, bulldozer construcure of road, leveling of site
ca. 1890	Locus A, 0-10cm	probable mining, possible stamp mill, ditch across site, settlement pond, common cut nails, no habitation on locus
	Locus B 0-30cm	habitation area with common cut nails, ironstone plates, boot fragment, jean's button
ca. 1870	Locus A 0-20cm	glass trade bead, Gunther and triangular points and other artifacts of glass, glass debitage
150-500 BP	Locus A 0-20cm	Gunther points, mortars and pestles hydration values of 1.9-3.0 microns (GF) and 0.9-1.3 microns (T)
	Locus B surface	hopper basket mortars and pestles
1000-2500 BP	Locus A 0-100cm	side- and corner-notched points, notched-pebble net-weights, manos and millingstones heavy use of ochre fragments and artifacts, hearth with C14 date 1760 ± yrs B.P., predominant use of Tuscan obsidian with hydration values of 2.9-4.1 microns (GF) and 1.5-3.1 microns (T)
	Locus B 30-130cm	baking oven with C14 date of 1720 ± 75 B.P.
2500-4000 BP	Locus A 0-100cm	mano and millingstone features, flake tools, McKee Unifaces, obsidian debitage, incised stone artifacts, predominant use of Grasshopper Flat obsidian with hydration values of 3.5-5.1 microns (GF)

tion values at CA-SHA-475 on Squaw Creek. The mean depth at that site for 267 Squaw Creek Contracting Stem points was 4.85 feet and for 92 McKee Unifaces the mean depth was 3.78 feet. Obsidian hydration values for 10 Squaw Creek Contracting Stem points averages 4.83 microns while this figure for McKee Unifaces is 4.52 microns (Sundahl 1992:31-32).

The model for the Sacramento River Canyon describes the Pollard Flat phase as representing a forager system with residential moves by the entire social unit to take advantage of available resources. Residential bases were occupied for relatively extended periods, a few weeks to months, and supported limited logistical activities (Basgall and Hildebrandt 1989:445). Data from the Moccasin Creek site does not disagree with this model.

Perhaps around 2500 years ago, a new group of people began camping at the Moccasin Creek site. Although these may have been the descendants of the earlier group, a nearly complete change in artifact types and behavior patterns suggest that it was a different group, perhaps the Hokan-speaking Yana moving up the Sacramento River from the south and east. As human populations gradually increased, each group may have been increasingly limited in their north-south movements along the river.

This new group used side-notched and corner-notched points to hunt deer and bear. Their points were made of obsidian from the Tuscan formation to the east, but they did little obsidian reduction at the site. They apparently came to Moccasin Creek to fish, using notched-pebble net-weights and large anchors. They made heavy usage of river cobbles in cooking activities and collected large amounts of ochre for unknown reasons. They came perhaps in the spring and fall, spending other seasons in the foothills and mountains to the east where they hunted, gathered other seasonal resources, and collected and reduced Tuscan obsidian into projectile points.

The cultural assemblage represented by Clikapudi Notched points has been found fairly widely in Shasta County, in the Sacramento River Canyon to the north, Clikapudi and Salt Creek drainages to the east, Whiskeytown National Recreation Area to the west, and in CA-SHA-882, the Hartnell site to the south. Only the latter, also located on the Sacramento River, shares a significant number of notched-pebble net-weights. Large amounts of ochre stained stones were found in that site where they covered a burial (Clewett and Sundahl 1982a). Foothill sites, by contrast, contain semi-subterranean houses, comparatively larger amounts of projectile points, obsidian debitage, and milling equipment.

This cultural assemblage compares to the Vollmers phase defined for the Sacramento River Canyon. The overlap of obsidian hydration values between the Pollard Flat and Vollmers phase is interpreted as the concurrent use of the canyon by two separate

groups over a period of 1200 years (Basgall and Hildebrandt 1989:444-445) . The mechanism which allowed this coeval use is seen as a difference in subsistence-settlement systems; while the Pollard Flat phase represents a forager system, the Vollmers phase is interpreted as representing a fission-fusion strategy in which populations during the fall and winter were "logistically organized around a strategically situated residential base camp, but at other times of the year the social unit dispersed and smaller groups followed a forager strategy (Basgall and Hildebrandt 1989:450). The Vollmers phase populations appear to have been more mobile than the Pollard Flat groups with a greater degree of intersite variability, more expedient technologies, off-site tool production, and minimal use of milling equipment (Basgall and Hildebrandt:1989:445).

While cultural remains from Moccasin Creek agree with the latter part of this model, in which sites in different environmental zones represent more seasonally specialized collecting activities, the fission-fusion portion is not supported by the evidence. Winter villages in the foothills, such as CA-SHA-231 at Clikapudi, are of sizes similar to Moccasin Creek and presumably supported a similar sized population. The overlap of obsidian hydration values of McKee Unifaces and Clikapudi points could be interpreted as representing a temporal overlap, but given the imprecise nature of obsidian hydration, it seems more likely that one preceded the other.

In time, this group was replaced by a population of people hunting with bows and arrows tipped with Gunther Series points and grinding plant foods with mortars and pestles. Although time and the introduction of new technology could account for this change, other archaeological and linguistic evidence indicates that this new assemblage represents the introduction of the Penutian-speaking Wintu into northern California and the resultant displacement of the Hokan-speaking groups.

This late prehistoric occupation appears largely destroyed at the site. Many of the Gunther Series points, mortars, and pestles were found on the surface of the slopes to the east and west where they probably had been displaced by bulldozer activity. Many sites dating to this cultural period have been excavated and described. The Moccasin Creek site probably has little to add to this inquiry.

The historic Native American occupation, probably dating to around 1870, is distinguished by glass artifacts and debitage, but little else can clearly be attributed to this component. It perhaps is of interest in studying the interaction between the Wintu and the dominant Euro-American society, but little evidence remains. Similar components have been found at CA-SHA-46 (Woolfenden 1970) and CA-SHA-266 (Clewett and Sundahl 1981) in Redding and CA-SHA-472 on Salt Creek (Sundahl 1991), all of which have

far larger data sets relating to this cultural phase.

The circa-1890's cultural remains, apparently related to the processing of gold, may have contributions to make in the study of late 19th Century mining. Any extant features related to this component probably lie outside of the Locus A prehistoric midden, perhaps uphill to the south, and possibly within Locus B. The most recent historic component, dating perhaps 60 years ago, is well represented elsewhere and there seems little value in devoting further study to this component.

Although the Moccasin Creek site is small and its midden deposit has suffered considerable disturbance and destruction, it retains valuable cultural strata dating to the earliest known prehistoric use of the Sacramento River in the vicinity of Redding. It has a great deal to offer in the continuing study of northern California prehistory.

REFERENCES

Baker, Suzanne
1990 Archaeological Excavations at CA-Sha-479 and CA-Sha-195, Shasta County, California. Report on file at the National Park Service, San Francisco.

Basgall, Mark E., and William R. Hildebrandt
1989 Prehistory of the Sacramento River Canyon, Shasta County, California. Center for Archaeological Research at Davis Publication 9.

Bauman, James
1981 The Harrington Collection of Indian Placenames in North Central California. Report on file at the Shasta-Trinity National Forest, Redding.

Bennyhoff, James A.
1994 Central California Augustine: Implications for Northern California Archaeology. IN Toward a New Taxonomic Framework for Central California Archaeology, pp. 65-74, by James A Bennyhoff and David A. Fredrickson, Edited by Richard Hughes. Contributions of the University of California Archaeological Research Facility 52. Berkeley.

Clewett, S. E., and Elaine Sundahl
1981 The Archaeological Investigation of Eagle Court, A Partial Mitigation of CA-SHA-266, Redding, California. On file at the Shasta College Archaeology Laboratory, Redding.

1982a Archaeological Testing for the Hartnell Extension Project, Redding, California. On file at the Shasta College Archaeology Laboratory, Redding.

1982b Clikapudi Archaeological District: 1981 Field Research. Report prepared for the Shasta-Trinity National Forest, Redding.

1983 Archaeological Excavations at Squaw Creek, Shasta County, California. Report prepared for the Shasta-Trinity National Forests, Redding.

Dillon, Brian D.
1995 Timberland Historical Archaeology Notes: California Gold Rush Mining and Refining Methods. California Department of Forestry Archaeological Reports 16, Sacramento.

Dreyer, William, and Makoto Kowta
n.d. Draft copy of the Flat Creek Archaeological Report (CA-SHA-1588). On file at the Northeast California Information Center, California State University, Chico.

DuBois, Cora
1935 Wintu Ethnography. University of California Publications in American Archaeology and Ethnology 36:1-147. Berkeley.

Edwards, Robert, Ed.
1968 Notes on the Wintun. Results of the California Archaeology Workshop. On file at the Center for Archaeological Research, University of California, Davis.

Farber, Alfred and Neal Neuenschwander
1984 Archaeological Test Excavation at the Fay Hill Site, CA-Sha-1481, Shasta County, California. Report prepared for the Bureau of Land Management, Redding.

Foster, Amy
1982 The Salvage Excavation of a Portion of CA-SHA-501, Shasta County, California. On file at the City of Redding.

Guilford-Kardell, Margaret and James Dotta
1980 Papers on Wintu Ethnography: 239 Wintu Villages in Shasta County Circa 1850. Redding Museum Occasional Papers 1. Redding Museum and Art Center, Redding.

Klaseen, T. A., and D. K. Ellison
1974 Soil Survey of the Shasta County Area, California. United States Department of Agriculture Soil Conservation Service and Forest Service, U. S. Government Printing Office.

Kroeber, A. L.
1976 Handbook of the Indians of California. Dover Publications, Inc., New York.

LaPena, Frank R.
1978 Wintu. IN Handbook of North American Indians, California Volume 8:324-235. Robert F. Heizer, Editor. Smithsonian Institution, Washington, D.C.

Levy, Richard S.
1996 Penutian and Hokan Plant Names and Sacramento River Linguistic Prehistory. Paper presented at the Sacramento River Ecosystem Prehistory Symposium, California State University, Chico, on February 24, 1996.

Lydon, Philip A., and J. C. O'Brien
1974 Mines and Mineral Resources of Shasta County, California. County Report 6, California Division of Mines and Geology, Sacramento

McGuire, Kelly R.
1989 Incised Stones. Appendix D IN Prehistory of the Sacramento River Canyon, Shasta County, California, by Mark E. Basgall and William R. Hildebrandt. Center of Archaeological Research at Davis 9.

Meighan, Clement W.
1955 Archaeology of the North Coast Ranges, California. University of California Archaeological Survey Reports 30:1-39. Berkeley.

Moratto, Michael J.
1984 California Archaeology. Academic Press, Orlando.

Petersen, Edward
1965 In the Shadow of the Mountain: A Short History of Shasta County, California. Redding, California.

Praetzellis, Mary, Betty Rivers, and Jeanette K. Schultz
1983 Ceramic Marks from Old Sacramento. California Archaeological Reports 22, Department of Parks and Recreation, Sacramento.

Ritter, Eric W.
1991 A Study of Glass Trade Beads from Some Protohistoric Wintu Villages in the Northern Sacramento Valley. Appendix IN Archaeological Investigations in the Salt Creek Drainage, Shasta County, California, by Elaine Sundahl and S. Edward Clewett. On file at the Shasta College Archaeology Laboratory, Redding.

Rock, James
1981 Glass Bottles: Basic Identification. On file at the Klamath National Forest, Yreka.

Silver, Shirley
1978 Shastan Peoples. IN Handbook of North American Indians, California Volume 8:211-224. Robert F. Heizer, Ed. Smithsonian Institution, Washington, D. C.

Smith, C. E., and W. D. Weymouth
1952 Archaeology of the Shasta Dam Area, California. University of California Archaeological Survey Reports 18. Berkeley.

Smith, Dottie
1991 The Dictionary of Early Shasta County History. Redding.

Strand, Rudolph G., Compiler
1962 Geologic Map of California - Redding Sheet. California Division of Mines and Geology, San Francisco.

Sundahl, Elaine
1982 The Shasta Complex in the Redding Area, California. M.A. Thesis on file at the Department of Anthropology, California State University, Chico.

1986 Cultural Resources of the Shasta Lake Pool Area, Shasta County, California. Report on file at the Shasta-Trinity National Forests, Redding.

Sundahl, Elaine
1992 Cultural Patterns and Chronology in the Northern Sacramento River Drainage. In: Proceedings of the Society for California Archaeology 5. Martin D. Rosen, Lynne E. Christenson and Don Laylander, eds., pp. 89-112, San Diego: Society for California Archaeology.

1996 West Redding Archaeological Project: CA-SHA-1556 and CA-SHA-1738, The Quartz Hill Sites. On file at the Bureau of Land Management, Redding.

1998 West Redding Archaeological Project: Excavations at CA-SHA-1991, Shasta County, California. On file at the Bureau of Land Management, Redding.

Sundahl, Elaine, and S. Edward Clewett
1991 Archaeological Investigations in the Salt Creek Drainage, Shasta County, California. On file at the Bureau of Land Management, Redding.

Treganza, Adan E., and Martin H. Heicksen
1960 Salvage Archaeology in the Whiskeytown Reservoir Area and the Wintu Pumping Plant, Shasta County, California. Occasional Papers in Anthropology 1, California State University, San Francisco.

Tyree, K. D.
1992 The Middle Mule Pond Site (CA-SHA-1544). MS on file at the Bureau of Land Management, Redding.

Vaughan, Trudy
1992 Archaeological Investigations at CA-SHA-47 and CA-SHA-236 on the Sacramento River, Redding, Shasta County, California. On file at the City of Redding.

Wheeler, Barbara
1994 A Functional Analysis of the McKee Uniface in Northern California. Masters Thesis on file at the Department of Anthropology, California State University, Chico.

Whistler, Kenneth W.
1977 Wintun Prehistory: An Interpretation Based on Linguistic Reconstruction of Plant and Animal Nomenclature. In Proceedings of the Third Annual Meeting of the Berkeley Linguistic Society.

Woolfenden, Wallace B.
1970 A Study in Historic Sites Archaeology. Masters Thesis on file at the Department of Anthropology, California State University, San Francisco.

TABLE A-1

Distribution of Obsidian Debitage at CA-SHA-2611/H
by number and weight in grams per level
1/4" fraction

DEPTH/CM	N0-E16	S1-E15	S3-E16	S5-E15	S7-E15
0-10	5/1.2	3/0.4	14/5.6	9/0.2	15/6.1
10-20	5/1.7	13/3.0	14/6.0	16/9.9	23/9.3
20-30	4/1.0	15/4.1	7/6.8	14/2.9	17/3.8
30-40	8/1.3	10/2.9	10/3.0	19/7.0	11/5.3
40-50	15/5.1	16/3.4	18/6.0	25/5.5	20/6.4
50-60		9/4.2	15/4.0	32/11.1	40/12.5
60-70			1/0.5	30/10.9	4/1.0
70-80				10/7.3	
80-90				-	
90-100				-	

DEPTH/CM	S7-E16	S8-E14	S8-E15	S9-E15	S9-E17
0-10	14/3.5	9/9.7	20/3.7	17/6.8	10/4.4
10-20	22/6.1	27/5.7	18/5.6	20/8.3	15/7.3
20-30	20/3.7	17/3.9	26/5.8	14/8.5	9/3.9
30-40	19/6.3	20/7.5	38/10.8	24/5.6	15/4.0
40-50	19/9.8	33/18.3	22/4.4	8/2.6	13/8.2
50-60	14/2.6	41/18.8	30/13.4	10/2.3	4/2.9
60-70		26/8.8	2/2.0	1/0.1	
70-80		1/0.1			
80-90		1/0.1			

DEPTH/CM	S10-E12	S10-E14	S10-E15
0-10	23/6.5	12/5.6	14/2.8
10-20	11/3.6	26/7.2	39/8.6
20-30	15/7.4	27/10.2	19/4.1
30-40	19/4.3	23/7.4	16/7.5
40-50	16/7.2	8/2.6	9/2.9
50-60	27/13.4	2/0.3	
60-70	30/5.3		
70-80	46/10.7		
80-90	44/12.2		
90-100	11/3.9		

TABLE A-1

continued

DEPTH/CM	S14-E8	S14-E9	S14-E11	S14-E12	S14-E13
0-10	27/9.6	9/2.7	12/4.0	31/10.7	19/5.5
10-20	18/5.5	15/5.0	23/5.3	23/6.4	22/9.2
20-30	17/8.2	9/3.8	17/2.7	12/3.8	17/5.4
30-40	19/6.5	19/6.9	14/3.2	18/8.0	25/6.5
40-50	26/4.7	17/7.3	11/2.1	23/9.1	30/16.5
50-60	26/4.7	15/2.8	17/2.8	23/9.7	44/11.3
60-70	19/4.9	11/3.3	21/7.0	28/16.5	38/11.2
70-80	9/0.2	19/11.4	33/8.8	30/10.3	54/28.1
80-90	20/5.4	22.5.0	23/8.3	20/3.3	21/4.7
90-100	18/7.4	3/1.3			
100-110	10/2.6	1/0.3			
110-120	3/1.0	2/2.6			
120-130	5/1.5				

DEPTH/CM	S14-E16	S14-E17	S18-E14	S21-E14
0-10	27/6.1	21/7.0	7/1.8	4/1.7
10-20	29/10.4	21/9.9	-	4/0.5
20-30	38/23.6	31/9.5	-	-
30-40	33/9.9	30/10.6	-	-
40-50	64/19.6	54/19.6		
50-60	49/17.1	60/15.0		
60-70		4/2.4		

DEPTH/CM	UNIT B-1	UNIT B-2	UNIT B-3
0-10	4/0.6	3/0.5	3/0.6
10-20	2/0.4	6/1.4	2/0.5
20-30	3/1.9	7/2.9	2/1.0
30-40	4/2.2	2/1.6	2/0.9
40-50	5/1.0	4/0.8	-
50-60	3/0.9	1/0.3	2/0.5
60-70	3/0.5	9/4.5	3/1.8
70-80	5/5.2	3/0.6	
80-90	4/2.6	4/1.3	
90-100	7/3.0	4/1.0	
100-110	2/0.5	1/0.1	
110-120	-	2/0.9	

TABLE A-2

Distribution of Obsidian Debitage at CA-SHA-2611/H
by number and weight in grams per level
1/8" fraction

DEPTH/CM	S1-E15	S7-E16	S10-E15
0-10	37/1.1	37/1.7	49/1.7
10-20	35/0.9	52/1.7	88/2.9
20-30	33/1.3	118/3.5	51/1.8
30-40	80/1.9	49/1.4	58/2.1
40-50	73/1.8	98/3.8	43/1.3
50-60	43/1.4	25/1.0	

TABLE A-3

Distribution of Glass Debitage at CA-SHA-2611/H
by number and weight per level
1/4" fraction

DEPTH/CM	S9-E17	S10-E12	S10-E14	S10-E15	B-1
0-10	1/2.1	2/0.6	6/9.9	1/0.7	1/0.1
10-20	1/0.1	2/0.4	9/4.6	4/0.3	-
20-30	-	3/1.8	3/1.8	3/4.9	-
30-40	-	3/4.8	-	-	1/0.5
40-50	-	-	1/1.4	3/0.6	-
50-60	-	3/0.7	-		-
60-70		1/0.1			-
70-80		4/7.6			-
80-90		1/0.1			-
90-100		4/3.3			-
100-110					-
110-120					-

TABLE A-4

Distribution of Metavolcanic Debitage at CA-SHA-2611/H
by number and weight in grams per level

DEPTH/CM	N0-E16	S1-E15	S3-E16	S5-E15	S7-E15
0-10	9/117.7	17/173.3	7/17.8	19/79.6	22/147.2
10-20	10/202.4	16/181.5	17/255.5	16/387.2	40/286.3
20-30	10/150.8	27/249.0	29/175.0	14/42.1	14/56.4
30-40	17/666.5	24/245.3	56/331.3	41/461.7	14/116.1
40-50	18/113.2	45/481.1	10/290.9	26/166.8	7/118.2
50-60		27/326.4	10/123.8	22/63.9	34/264.1
60-70			3/13.4	33/162.8	6/11.0
70-80				12/8.8	
80-90				3/27.3	
90-100				-	

DEPTH/CM	S7-E16	S8-E14	S8-E15	S9-E15	S9-E17
0-10	15/32.2	15/90.7	29/322.5	17/56.8	12/88.6
10-20	14/468.2	21/148.0	22/116.3	15/147.2	38/233.1
20-30	28/446.5	29/656.6	45/525.4	23/413.2	29/577.3
30-40	30/330.0	23/360.7	37/221.3	18/76.5	33/262.3
40-50	36/204.2	16/121.5	20/158.8	21/194.5	13/112.6
50-60	17/127.6	27/158.8	18/141.2	8/32.8	10.39.5
60-70		23/204.2	5/12.0	2/3.3	
70-80		3/8.0			
80-90		1/0.5			

DEPTH/CM	S10-E12	S10-E14	S10-E15
0-10	23/179.2	19/84.0	29/38.1
10-20	19/431.8	16/173.3	40/96.1
20-30	16/37.6	20/204.2	36/530.9
30-40	23/112.5	11/71.9	23/62.4
40-50	39/101.1	15/42.2	32/88.8
50-60	4/211.3	4/116.1	
60-70	16/100.6		
70-80	15/99.6		
80-90	48/400.8		
90-100	28/389.5		

TABLE A-4

continued

DEPTH/CM	S14-E8	S14-E9	S14-E11	S14-E12	S14-E13
0-10	30/194.2	5/46.2	28/214.7	21/62.1	23/212.0
10-20	12/35.2	2/26.4	21/89.8	28/282.3	13/468.5
20-30	15/92.8	4/18.6	41/372.3	19/543.0	23/510.6
30-40	9/67.1	13/237.8	35/488.2	42/882.0	28/407.8
40-50	12/120.2	4/39.6	31/382.4	54/765.8	39/493.3
50-60	13/99.8	5/80.3	28/698.1	40/259.3	33/542.2
60-70	14/174.5	10/89.2	22/327.3	41/467.5	30/241.9
70-80	10/90.6	26/181.7	29/446.1	40/287.9	38/82.0
80-90	14/155.5	31/373.0	38/366.6	16/144.0	13/36.0
90-100	17/338.7	8/11.8			
100-110	15/83.7	9/16.3			
110-120	5/34.3	4/10.5			
120-130	4/16.6				

DEPTH/CM	S14-E16	S14-E17	S18-E14	S21-E14
0-10	35/321.3	9/104.5	5/7.9	3/8.0
10-20	26/110.7	26/140.1	-	-
20-30	14/31.9	37/233.3	-	-
30-40	35/327.7	26/222.7	-	-
40-50	35/256.0	33/283.6		
50-60	38/298.9	21/27.8		
60-70		1/1.0		

DEPTH/CM	UNIT B-1	UNIT B-2	UNIT B-3
0-10	14/48.8	15/129.1	20/153.8
10-20	16/39.8	13/110.4	4/92.7
20-30	7/152.5	13/522.5	6/373.5
30-40	6/59.0	5/42.8	5/55.5
40-50	14/360.9	13/366.3	3/43.8
50-60	8/64.1	13/194.5	14/228.4
60-70	3/12.7	5/58.7	16/224.1
70-80	7/18.0	5/165.7	
80-90	9/217.7	17/336.3	
90-100	3/7.5	5/42.0	
100-110	1/30.8	3/4.8	
110-120	2/48.6	-	

TABLE A-5

Distribution of Bone Fragments at CA-SHA-2611/H
by number and weight in grams per level

DEPTH/CM	N0-E16	S1-E15	S3-E16	S5-E15	S7-E15
0-10		1/0.1	-	-	-
10-20	-	1/0.1	-	-	-
20-30	-	2/0.1	-	-	-
30-40	-	3/0.4	-	-	-
40-50	-	1/0.1	-	2/0.7	-
50-60			-	-	-
60-70			-	1/0.2	-
70-80				-	
80-90				-	
90-100				-	

DEPTH/CM	S7-E16	S8-E14	S8-E15	S9-E15	S9-E17
	-				
0-10	-	7/1.8	-	2/0.3	-
10-20	1/0.1	1/0.2	-	1/0.1	-
20-30	1/0.1	4/1.6	1/0.2	1/0.3	-
30-40	9/0.8	1/0.2	-	4/1.3	-
40-50	-	4/0.5	-	-	-
50-60		1/0.2	-	-	-
60-70		-	-		-
70-80		-			
80-90		-			

DEPTH/CM	S10-E12	S10-E14	S10-E15
0-10	4/1.3	1/0.4	5/2.4
10-20	4/3.4	-	6/1.5
20-30	10/2.3	-	1/0.2
30-40	-	-	4/1.4
40-50	2/0.7	2/0.7	3/0.5
50-60	-	-	
60-70	-		
70-80	-		
80-90	1/0.1		
90-100	-		

TABLE A-5

Continued

DEPTH/CM	S14-E8	S14-E9	S14-E11	S14-E12	S14-E13
0-10	-	-	1/0.4	-	-
10-20	1/0.8	-	8/1.8	-	-
20-30	-	-	-	-	-
30-40	-	-	1/0.1	-	1/0.4
40-50	4/1.9	-	1/0.2	-	-
50-60	1/0.3	-	2/0.6	3/1.3	-
60-70	1/0.2	-	-	3/0.8	5/0.9
70-80	-	-	-	-	2/0.3
80-90	-	-	5/1.9	1/0.2	2/0.4
90-100	-	-			
100-110	-	-			
110-120	-	-			
120-130	-				

DEPTH/CM	S14-E16	S14-E17	S18-E14	S21-E14
0-10	-	-	-	-
10-20	-	-	-	-
20-30	-	3/1.2	-	-
30-40	-	-	-	-
40-50	-	-		
50-60	6/1.6	5/2.6		
60-70		-		

DEPTH/CM	UNIT B-1	UNIT B-2	UNIT B-3
0-10	1/30.3	3/1.4	-
10-20	3/2.2	-	-
20-30	-	-	-
30-40	-	-	-
40-50	-	-	-
50-60	-	-	-
60-70	-	-	-
70-80	-	-	
80-90	1/0.2	-	
90-100	-	-	
100-110	-	-	
110-120	-	1/1.1	

TABLE A-6

Distribution of Fire-Altered Rock at CA-SHA-2611/H
by weight in kilograms per level

DEPTH/CM	N0-E16	S1-E15	S3-E16	S5-E15	S7-E15
0-10	3.0	4.0	4.7	4.0	3.8
10-20	7.7	9.5	3.3	5.0	16.2
20-30	4.0	3.5	1.0	6.2	NA
30-40	0.5	4.4	-	9.5	7.1
40-50	-	3.6	-	5.2	3.6
50-60		0.8	-	-	-
60-70			-	-	-
70-80				-	
80-90				-	
90-100				-	

DEPTH/CM	S7-E16	S8-E14	S8-E15	S9-E15	S9-E17
0-10	3.8	6.5	11.4	3.5	4.3
10-20	5.3	8.5	6.3	11.7	4.3
20-30	10.0	6.2	6.7	10.8	7.8
30-40	4.0	13.7	NA	26.3	2.8
40-50	7.5	1.4	4.3	13.0	2.1
50-60	5.0	1.1	-	-	5.5
60-70		0.1	-	-	
70-80		-			
80-90		-			

DEPTH/CM	S10-E12	S10-E14	S10-E15
0-10	10.0	5.4	2.1
10-20	16.5	6.5	3.0
20-30	17.5	6.4	4.7
30-40	12.8	8.0	1.1
40-50	15.8	14.3	1.7
50-60	18.2	3.8	
60-70	9.6		
70-80	3.0		
80-90	33.8		
90-100	10.3		

TABLE A-6

continued

DEPTH/CM	S14-E8	S14-E9	S14-E11	S14-E12	S14-E13
0-10	10.8	10.9	23.4	11.4	14.1
10-20	5.8	12.4	NA	22.1	28.0
20-30	12.5	39.1	7.9	NA	7.0
30-40	22.8	9.5	3.1	13.4	9.0
40-50	8.4	5.6	25.9	4.3	NA
50-60	3.0	7.2	5.0	5.1	1.0
60-70	8.1	9.2	1.1	1.3	2.0
70-80	19.3	4.8	1.1	2.2	0.2
80-90	7.0	1.5	2.0	0.1	0.4
90-100	3.0	-			
100-110	1.0	-			
110-120	1.0	-			

DEPTH/CM	S14-E16	S14-E17	S18-E14	S21-E14
0-10	12.2	4.7	0.1	-
10-20	10.4	9.4	-	1.0
20-30	9.0	7.4	-	-
30-40	3.1	4.0	-	-
40-50	4.5	3.5		
50-60	2.5	1.6		
60-70		0.5		

DEPTH/CM	UNIT B-1	UNIT B-2	UNIT B-3
0-10	0.3	0.6	4.0
10-20	0.1	0.5	8.9
20-30	11.5	3.4	45.1
30-40	9.1	6.4	3.6
40-50	17.3	3.6	16.1
50-60	7.0	17.2	21.0
60-70	7.3	9.8	NA
70-80	27.2	4.5	
80-90	NA	3.2	
90-100	NA	2.7	
100-110	13.2	3.2	
110-120	33.1	-	

NA information not reported

TABLE A-7

Distribution of Artifacts of Historic Age
At CA-SHA-2611/H

DEPTH/CM	N0-E16	S1-E15	S3-E16	S5-E15	S7-E15
0-10		1	2	-	-
10-20	-	-	-	-	-
20-30	-	-	-	-	-
30-40	-	-	-	-	-
40-50	-	-	-	-	-
50-60			-	-	-
60-70			-	-	-
70-80				-	
80-90				-	
90-100				-	

DEPTH/CM	S7-E16	S8-E14	S8-E15	S9-E15	S9-E17
	-				
0-10	-	2	2	13	7
10-20	-	-	-	-	6
20-30	-	-	-	-	-
30-40	-	-	-	-	-
40-50	-	-	-	-	-
50-60		-	-	-	-
60-70		-	-		-
70-80		-			
80-90		-			

DEPTH/CM	S10-E12	S10-E14	S10-E15
0-10	7	11	20
10-20	6	15	8
20-30	8	6	16
30-40	8	2	7
40-50	2	1	4
50-60	4	1	
60-70	3		
70-80	4		
80-90	5		
90-100	13		

TABLE A-7

Continued

DEPTH/CM	S14-E8	S14-E9	S14-E11	S14-E12	S14-E13
0-10	-	-	8	4	3
10-20	-	-	-	-	-
20-30	-	-	-	-	-
30-40	-	-	-	-	-
40-50	-	-	-	-	-
50-60	-	-	-	-	-
60-70	-	-	-	-	-
70-80	-	-	-	-	-
80-90	-	-	-	-	-
90-100	-	-			
100-110	-	-			
110-120	-	-			
120-130	-				

DEPTH/CM	S14-E16	S14-E17	S18-E14	S21-E14
0-10	12	16	-	5
10-20	-	1	-	-
20-30	-	-	-	-
30-40	-	-	-	-
40-50	-	-		
50-60	-	-		
60-70		-		

DEPTH/CM	UNIT B-1	UNIT B-2	UNIT B-3
0-10	4	4	1
10-20	4	3	1
20-30	1	8	-
30-40	-	-	-
40-50	-	-	-
50-60	-	-	-
60-70	-	-	-
70-80	-	-	
80-90	-	-	
90-100	-	-	
100-110	-	-	
110-120	-	-	

TABLE B-1

Proveniences and Dimensions of McKee Unifaces
From CA-SHA-2611/H
(dimensions in mm and g)

CAT.#	PROVENIENCE	LENGTH	WIDTH	THICKNESS	WEIGHT
102-					
-13	surface	27	19	2	2.9
-14	"	26	12	4	1.0
-15	"	31	15	6	2.3
-16	"	-	14	6	-
-18	"	-	-	8	-
-56	S1-E15/20-30cm	-	12	7	-
-63	S1-E15/30-40cm	-	17	8	-
-64	"	-	-	7	-
-127	S5-E15/30-40cm	30	18	7	2.3
-135	S5-E15/40-50cm	-	-	-	-
-144	S5-E15/50-60cm	-	-	-	-
-152	S5-E15/60-70cm	-	18	9	4.0+
-271	S8-E14/50-60cm	38	16	8	4.2
-272	"	32	19	8	3.8
-297	S9-E15/10-20cm	37	20	10	5.7
-298	"	-	-	-	-
-304	S9-E15/20-30cm	30	16	6	2.4
-320	S9-E15/30-40cm	-	17	5	-
-491	S14-E9/80-90cm	(37)	20	10	4.8
-492	"	31	17	7	2.3
-623	B-2/80-90cm	31	15	7	2.3
-644	surface	37	17	11	5.2
-718	S8-E15/40-50cm	-	19	10	3.4+
-730	S8-E15/50-60cm	28	15	7	2.5
-778	S10-E12/50-60cm	-	13	5	-
-803	S10-W12/80-90cm	23	12	9	1.8
-869	S10-E14/30-40cm	28	14	5	1.4
-936	S14-E11/10-20cm	48	18	7	5.2
-946	S14-E11/30-40cm	-	-	-	-
-1053	S14-E12/50-60cm	-	15	6	-
-1133	S14-E13/50-60cm	27	12	10	2.3
-1167	S14-E16/0-10cm	-	-	8	-
-1187	S14-E16/30-40cm	-	-	6	-
-1198	S14-E16/40-50cm	-	-	8	-
-1203	S14-E16/50-60cm	-	15	8	-
-1211	S14-E17/0-10cm	-	-	-	-
-1246	S14-E17/50-60cm	34	16	8	4.0
-1247	"	25	18	7	2.6

( ) estimated value

TABLE B-2

Proveniences and Dimensions of Foliate Points
From CA-SHA-2611/H
(dimensions in mm and g)

CAT.#	PROVENIENCE	LENGTH	WIDTH	THICKNESS	WEIGHT
102-					
-73	S1-E15/40-50cm	-	20	6	-
-221	S8-E14/10-20cm	34	12	5	1.4
-462	S14-E9/20-30cm	-	12	6	-
-555	B-1/80-90cm	26	14	7	1.8
-653	S7-E15/10-20cm	29	15	6	2.1
-731	S8-E15/50-60cm	31	17	8	3.3
-1020	S14-E12/30-40cm	30	19	5	2.5
-1052	S14-E12/50-60cm	26	15	7	2.1
-1217	S14-E17/10-20cm	30	24	7	2.9
-1234	S14-E17/30-40cm	27	19	6	2.9

TABLE B-3

Proveniences and Dimensions of Clikapudi Series Points
From CA-SHA-2611/H
(dimensions in mm and g)

CAT.#	PROVENIENCE	LENGTH	WIDTH	THICKNESS	HAFTING WIDTH	WEIGHT
102-						
-9	surface	(31)	(15)	5	5	1.4+
-11	"	21	14	3	6	0.7
-12	"	(34)	(23)	4	12	2.3+
-163	S5-E15/80-90	25	-	5	9	1.3+
-166	S7-E16/0-10	31	14	4	9	1.5
-187	S7-E16/30-40	-	18	-	13	-
-220	S8-E14/10-20	23	(15)	5	10	(1.3)
-257	S8-E14/40-50	-	-	4	7	-
-258	"	(25)	14	4	10	1.1+
-412	S14-E8/70-80	-	-	6	11	-
-556	B-1/80-90	19	11	3	8	0.4
-618	B-2/70-80	27	19	5	10	1.9
-645	surface	-	12	4	6	-
-654	S7-E15/10-20cm	26	14	5	9	1.8
-830	S10-E12/90-100cm	27	23	5	15	2.5
-884	S10-E14/50-60cm	(23)	12	5	8	1.3
-937	S14-E11/10-20cm	21	15	4	8	1.8
-1037	S14-E12/40-50cm	-	-	-	9	-
-1197	S14-E16/40-50cm	22	15	4	6	0.7
-1222	S14-E17/20-30cm	-	17	7	12	3.0

( ) estimated value

TABLE B-4

Proveniences and Dimensions of Small Stemmed Points
From CA-SHA-2611/H
(dimensions in mm and g)

CAT.#	PROVENIENCE	LENGTH	WIDTH	THICKNESS	HAFTING WIDTH	WEIGHT
102-						
-10	surface	23	15	5	7	1.0
-384	S14-E8/10-20cm	27	15	5	8	1.7
-1005	S14-E12/0-10cm	29	15	7	9	2.3

TABLE B-5

Proveniences and Dimensions of Gunther Series Points
From CA-SHA-2611/H
(dimensions in mm and g)

CAT.#	PROVENIENCE	LENGTH	WIDTH	THICKNESS	HAFTING WIDTH	WEIGHT
102-						
-8	surface	(24)	(16)	4	4	(0.9)
-287	S8-E14/70-80	(29)	16	3	4	(0.8)
-290	S8-E14/80-90	(30)	(17)	3	-	(0.6)
-646	surface	30	19	3	2	1.0
-741	S10-E12/0-10cm	-	14	3	4	-
-845	S10-E14/0-10cm	17	15	3	5	0.4
-862	S10-E14/20-30cm	18	16	3	4	0.7
-963	S14-E11/50-60cm	21	16	3	6	0.7

( ) estimated value

TABLE B-6

Proveniences and Dimensions of Projectile Point Fragments
From CA-SHA-2611/H
(dimensions in mm and g)

CAT.#	PROVENIENCE	LENGTH	WIDTH	THICKNESS	WEIGHT
102-					
-65	S1-E15/30-40cm	-	-	-	-
-97	S3-E16/30-40cm	-	-	10	-
-119	S5-E15/20-30cm	-	-	8	-
-153	S5-E15/60-70cm	-	16	8	-
-188	S7-E16/30-40cm	-	-	-	-
-203b	S7-E16/40-50cm	-	-	6	-
-229	S8-E14/20-30cm	-	-	-	-
-259d	S8-E14/40-50cm	-	-	5	-
-283	S8-E14/60-70cm	-	-	2	-
-394	S14-E8/30-40cm	-	-	7	-
-413	S14-E8/70-80cm	-	-	-	-
-442	S14-E8/100-110cm	-	-	6	-
-481	S14-E9/70-80cm	-	-	8	-
-681	S8-E15/0-10cm	-	-	-	-
-682	"	-	-	-	-
-742	S10-E12/0-10cm	-	-	-	-
-796	S10-E12/70-80cm	-	-	-	-
-1238	S14-E17/40-50cm	-	-	-	-
-1273	B-3/20-30cm	-	-	-	-

TABLE B-7

Proveniences and Dimensions of Edge-Modified Flakes of Obsidian
From CA-SHA-2611/H
(dimensions in mm and g)

CAT.#	PROVENIENCE	LENGTH	WIDTH	THICKNESS	WEIGHT
102-					
-17	surface	23	9	5	0.6
-19	"	30	12	4	1.1
-20	surface	-	-	3	-
-33	N0-E16/30-40cm	-	-	7	-
-98	S3-E16/30-40cm	16	13	4	0.3
-111	S5-E15/0-10cm	18	17	5	1.2
-135	S5-E15/40-50cm	-	-	4	-
-145	S5-E15/50-60cm	-	-	3	-
-154a	S5-E15/60-70cm	33	20	7	4.1
-154b	"	16	13	3	0.5
-154c	"	-	-	4	-
-167	S7-E16/0-10cm	-	-	3	-
-171a	S7-E16/10-20cm	22	13	4	1.0
-171b	"	-	18	5	-
-189a	S7-E16/30-40cm	20	15	3	0.8
-189b	"	19	11	4	0.6
-203a	S7-E16/40-50cm	34	20	12	5.4
-222a	S8-E14/10-20cm	20	1	4	0.7
-222b	"	25	11	3	1.0
-259a	S8-E14/40-50cm	32	7	3	0.6
-259b	S8-E14/40-50cm	19	15	6	1.5
-259c	"	-	17	4	-
-274	S8-E14/50-60cm	22	17	6	1.7
-275	"	31	19	8	3.0
-305	S9-E15/20-30cm	26	23	5	2.9
-385	S14/E8/10-20cm	21	20	3	0.8
-395	S14-E8/30-40cm	22	21	5	2.5
-557	B-1/80-90cm	34	11	5	2.0
-602a	B-2/40-50cm	26	18	4	1.8
-602b	"	20	14	3	0.8

TABLE B-7, continued

Proveniences and Dimensions of Edge-Modified Flakes of Obsidian From CA-SHA-2611/H
(dimensions in mm and g)

CAT.#	PROVENIENCE	LENGTH	WIDTH	THICKNESS	WEIGHT
102-					
-655	S7-E15/0-10cm	-	19	5	-
-663	S7-E15/40-50cm	21	18	8	2.6
-664	"	19	13	5	1.1
-686	S8-E15/10-20cm	20	18	6	1.9
-707	S8-E15/30-40cm	-	13	6	2.0
-708	"	-	-	6	-
-719	S8-E15/40-50cm	-	17	5	-
-779	S10-E12/50-60cm	24	15	6	1.9
-804	S10-E12/80-90cm	24	11	4	0.5
-832	S10-E12/90-100cm	31	14	4	-
-904	S10-E15/20-30cm	36	15	9	5.0
-913	S10-E15/30-40cm	22	22	5	2.2
-924	S10-E15/40-50cm	-	-	5	-
-947	S14-E11/30-40cm	28	24	10	5.8
-985	S14-E11/70-80cm	17	16	4	0.8
-986	"	-	-	-	-
-993	S14-E11/80-90cm	-	-	-	-
-994	"	-	-	-	-
-1054	S14-E12/50-60cm	30	14	5	2.4
-1154	S14-E13/70-80cm	25	15	6	2.5
-1155	"	17	15	4	0.9
-1176	S14-E16/20-30cm	29	18	7	3.5
-1188	S14-E16/30-40cm	-	18	5	-
-1189	"	-	-	6	-
-1190	"	-	-	-	-
-1199	S14-E16/40-50cm	-	-	4	-
-1200	"	-	-	5	-
-1203	S14-E16/50-60cm	-	16	8	-
-1204	"	24	17	4	1.8
-1205	"	-	-	4	-
-1212	S14-E17/0-10cm	24	12	3	0.9
-1240	S14-E17/40-50cm	-	-	5	-
-1248	S14-E17/50-60cm	20	16	3	1.3

TABLE B-8

Proveniences and Dimensions of Edge Modified Flakes
Of Basalt or Metavolcanic
(dimensions in mm and g)

CAT.#	PROVENIENCE	LENGTH	WIDTH	THICKNESS	WEIGHT
102-					
-37	N0-E16/30-40cm	52	46	27	67.0
-59	S1-E15/20-30cm	66	48	17	53.4
-68	S1-E15/30-40cm	65	49	18	42.1
-76	S1-E15/40-50cm	61	50	16	51.1
-82	S1-E15/50-60cm	96	63	32	192.3
-83	"	103	41	18	84.0
-84	"	97	80	20	296.4
-105	S3-E16/40-50cm	57	50	21	49.5
-130	S5-E15/30-40cm	105	83	20	176.6
-139	S5-E15/40-50cm	66	38	13	42.5
-140	"	41	33	15	18.5
-148	S5-E15/50-60cm	73	72	14	90.7
-149	"	-	-	19	-
-175	S7-E16/10-20cm	63	44	18	47.5
-179	S7-E16/20-30cm	113	57	20	124.1
-180	"	79	50	14	70.0
-181	"	63	40	14	39.4
-192	S7-E16/30-40cm	74	69	27	157.2
-195	"	66	56	24	79.7
-196	"	56	46	14	32.5
-206	S7-E16/40-50cm	114	58	25	186.6
-211	S7-E16/50-60cm	117	43	18	95.6
-217	S8-E14/0-10cm	-	-	14	-
-226	S8-E14/10-20cm	70	48	24	117.6
-236	S8-E14/20-30cm	74	47	20	64.5
-247	S8-E14/30-40cm	-	62	20	-
-249	"	63	34	27	84.3
-262	S8-E14/40-50cm	106	45	22	106.8
-263	"	62	56	20	83.5
-264	"	62	43	20	44.1
-265	"	-	-	19	-
-266	"	-	64	14	-
-267	"	66	46	23	68.4
-268	"	-	-	15	-
-280	S8-E14/50-60cm	-	-	15	-
-281	"	63	39	23	54.8
-286	S8-E14/60-70cm	93	40	19	65.2
-311	S9-E15/20-30cm	69	57	29	92.7
-312	"	61	48	22	69.6
-313	"	50	45	23	47.1
-314	"	50	32	23	36.1
-315	"	-	-	-	-
-339	S9-E15/50-60cm	122	58	24	162.3
-351	S9-E17/10-20cm	65	47	13	42.6
-352	"	57	36	17	31.5
-358	S9-E17/20-30cm	69	48	23	70.6

continued

TABLE B-8, continued

Proveniences and Dimensions of Edge Modified Flakes
Of Basalt or Metavolcanic
(dimensions in mm and g)

CAT.#	PROVENIENCE	LENGTH	WIDTH	THICKNESS	WEIGHT
-359	S9-E17/20-30cm	74	74	36	299.9
-375	S9-E17/50-60cm	62	44	21	57.3
-380	S14-E8/0-10cm	84	50	25	101.5
-383	"	44	38	21	31.7
-410	S14-E8/60-70cm	53	45	17	43.6
-416	S14-E9/70-80cm	97	64	29	86.8
-417	"	58	48	19	53.5
-418	"	83	35	15	37.6
-423	S14-E8/80-90cm	116	50	22	109.6
-424	"	36	31	15	14.0
-432	S14-E8/90-100cm	94	67	36	227.4
-433	"	72	57	23	132.2
-434	"	74	58	21	103.4
-435	"	48	44	16	39.9
-436	"	51	34	19	36.8
-476	S14-E9/50-60cm	63	48	24	77.4
-479	S14-E9/60-70cm	77	59	25	111.5
-486	S14-E9/70-80cm	74	50	29	129.6
-487	"	79	79	24	148.8
-488	"	86	61	20	91.8
-495	S14-E9/80-90cm	-	-	20	-
-496	"	66	48	24	64.7
-497	"	66	38	17	40.5
-514	B-1/0-10cm	42	26	10	13.1
-534	B-1/30-40cm	73	45	19	54.9
-535	"	46	43	19	37.5
-545	B-1/50-60cm	71	49	13	43.4
-546	"	44	34	15	19.8
-553	B-1/70-80cm	76	59	21	92.8
-560	B-1/80-90cm	93	64	26	126.6
-593	B-2/20-30cm	-	-	-	-
-600	B-2/30-40cm	76	57	11	67.0
-601	"	-	-	12	-
-610	B-2/50-60cm	-	-	33	-
-621	B-2/70-80cm	58	55	22	63.0
-622	"	56	43	16	26.1
-626	B-2/80-90cm	103	81	19	178.3
-627	"	56	55	15	59.4
-633	B-2/90-100cm	67	58	25	110.7
-634	"	64	47	20	54.1
-647	surface, Locus A	75	52	25	108.5
-673	S7-E15/50-60cm	75	52	25	108.5
-692	S8-E15/20-30cm	57	44	22	58.8
-693	"	71	51	23	78.3
-694	"	67	34	14	35.2
-695	"	61	37	14	27.1
-711	S8-E15/30-40cm	84	62	20	109.8

continued

TABLE B-8, continued

Proveniences and Dimensions of Edge Modified Flakes
Of Basalt or Metavolcanic
(dimensions in mm and g)

CAT.#	PROVENIENCE	LENGTH	WIDTH	THICKNESS	WEIGHT
-712	S8-E15/30-40cm	95	71	23	172.2
-723	S8-E15/40-50cm	103	63	28	177.7
-724	"	114	50	13	72.1
-725	"	94	45	11	69.5
-726	"	84	43	15	55.7
-727	"	-	-	19	-
-734	S8-E15/50-60cm	44	37	19	23.4
-740	S8-E15/60-70cm	62	40	33	77.3
-745	S10-E12/0-10cm	-	71	23	-
-746	"	-	-	-	-
-754	S10-E12/10-20cm	66	48	28	93.9
-788	S10-E12/60-70cm	92	79	25	224.9
-789	"	115	53	36	166.0
-790	"	-	-	14	-
-799	S10-E12/70-80cm	-	-	28	-
-800	"	54	46	27	58.1
-807	S10-E12/80-90cm	-	-	27	-
-808	"	65	46	21	66.9
-809	"	-	-	21	-
-810	"	-	62	19	-
-811	"	59	37	8	14.4
-835	S10-E12/90-100	68	51	15	50.1
-836	"	70	27	20	31.2
-838	"	79	58	25	127.1
-857	S10-E14/10-20cm	85	65	27	153.0
-865	S10-E14/20-30cm	77	69	25	205.6
-872	S10-E14/30-40cm	107	55	25	141.8
-873	"	89	52	20	100.5
-881	S10-E14/40-50cm	92	90	27	242.0
-890	S10-E15/0-10cm	-	50	14	-
-891	"	50	22	10	12.1
-897	S10-E15/10-20cm	-	-	-	-
-916	S10-E15/30-40cm	51	36	17	35.8
-927	S10-E15/40-50cm	52	45	14	35.3
-944	S14-E11/20-30cm	56	33	19	32.8
-945	"	74	39	17	47.8
-958	S14-E11/40-50cm	75	57	30	125.0
-966	S14-E11/50-60cm	82	58	10	104.1
-967	"	75	46	20	83.5
-968	"	45	35	11	17.0
-989	S14-E11/70-80cm	-	66	15	-
-997	S14-E11/80-90cm	136	103	54	688.7
-998	"	-	-	-	-
-1011	S14-E12/10-20cm	104	68	20	163.6
-1012	"	-	-	-	-
-1018	S14-E12/20-30cm	-	-	19	-
-1023	S14-E12/30-40cm	98	94	19	235.3

continued

TABLE B-8, continued

Proveniences and Dimensions of Edge Modified Flakes
Of Basalt or Metavolcanic
(dimensions in mm and g)

CAT.#	PROVENIENCE	LENGTH	WIDTH	THICKNESS	WEIGHT
-1024	S14-E12/30-40cm	93	72	27	223.7
-1025	"	82	69	11	66.9
-1040	S14-E12/40-50cm	79	63	21	119.6
-1041	"	35	28	16	15.4
-1057	S14-E12/50-60cm	129	29	19	69.9
-1058	"	-	-	16	-
-1059	"	-	-	-	-
-1065	S14-E12/60-70cm	85	41	23	87.8
-1066	"	86	59	19	99.8
-1067	"	101	50	17	114.9
-1068	"	-	-	8	-
-1081	S14-E12/70-80cm	60	52	23	65.0
-1090	S14-E13/0-10cm	60	44	28	74.0
-1091	"	48	43	14	27.5
-1099	S14-E13/10-20cm	73	64	26	146.8
-1103	S14-E13/20-30cm	61	58	17	59.3
-1114	S14-E13/30-40cm	90	84	24	202.5
-1115	"	99	46	30	129.4
-1116	"	68	68	20	122.2
-1117	"	25	18	6	3.3
-1125	S14-E13/40-50cm	96	41	14	85.0
-1126	"	59	56	21	64.1
-1139	S14-E13/50-60cm	80	48	23	74.3
-1140	"	58	58	19	65.3
-1141	"	58	33	16	38.2
-1150	S14-E13/60-70cm	54	39	21	46.0
-1159	S14-E13/70-80cm	96	45	14	69.1
-1170	S14-E16/0-10cm	74	57	21	103.2
-1179	S14-E16/10-20cm	86	68	26	106.0
-1180	"	69	55	25	95.8
-1186	S14-E16/20-30cm	59	42	20	48.7
-1193	S14-E16/30-40cm	-	65	21	-
-1194	"	46	37	21	39.3
-1208	S14-E16/50-60cm	-	-	15	-
-1225	S14-E17/20-30cm	74	70	31	142.2
-1226	"	-	57	11	-
-1243	S14-E17/40-50cm	67	48	14	45.8
-1244	"	-	-	9	-
-1251	S14-E17/50-60cm	61	29	19	41.3
-1252	"	43	22	8	6.2
-1276	B-3/20-30cm	72	68	22	89.5
-1289	B-3/50-60cm	-	-	25	-
-1290	"	-	-	-	-
-1296	B-3/60-70cm	94	58	22	111.2
-1297	"	60	43	28	78.1

TABLE B-9

Proveniences and Dimensions of Cobble Spalls
From CA-SHA-2611/H
(dimensions in mm and g)

CAT.#	PROVENIENCE	LENGTH	WIDTH	THICKNESS	WEIGHT
102-					
-6	surface	90	80	19	160.0
-7	"	83	65	17	101.4
-36	N0-E16/30-40cm	84	68	14	96.8
-101	S3-E16/30-40cm	-	87	21	-
-131	S5-E15/30-40cm	-	76	10	-
-150	S5-E15/50-60cm	124	49	16	100.8
-174	S7-E16/10-20cm	-	72	15	-
-216	S8-E14/0-10cm	79	49	16	59.9
-225	S8-E14/10-20cm	89	62	18	112.0
-232	S8-E14/20-30cm	139	24	27	601.5
-233	"	-	73	15	-
-234	"	78	77	14	95.9
-235	"	56	51	11	37.3
-237	"	65	50	15	66.0
-246	S8-E14/30-40cm	92	72	22	117.0
-278	S8-E14/50-60cm	85	73	13	78.8
-279	"	131	71	15	167.6
-308	S9-E15/20-30cm	115	80	20	233.1
-309	"	92	55	13	72.5
-323	S9-E15/30-40cm	92	64	12	95.2
-338	S9-E15/50-60cm	92	55	11	63.3
-357	S9-E17/20-30cm	-	85	19	-
-362	S9-E17/30-40cm	115	95	20	277.2
-363	"	-	70	15	-
-374	S9-E17/50-60cm	-	-	21	-
-379	S14-E8/0-10cm	112	60	19	161.6
-430	S14-E8/90-100cm	82	71	15	101.2
-431	"	86	70	13	65.8
-461	S14/E9/10-20cm	73	54	17	82.5
-465	S14-E9/20-30cm	100	76	18	145.0
-466	"	71	65	10	49.4
-470	S14-E9/30-40cm	87	70	20	153.6
-484	S14-E9/70-80cm	87	79	12	105.0
-485	"	61	61	12	43.8
-522	B-1/10-20cm	91	50	8	46.0
-552	B-1/70-80cm	78	42	8	28.1
-605	B-2/40-50cm	84	59	18	99.0
-639	B-2/100-110cm	73	61	11	57.1

continued

TABLE B-9, continued

Proveniences and Dimensions of Cobble Spalls
From CA-SHA-2611/H
(dimensions in mm and g)

CAT.#	PROVENIENCE	LENGTH	WIDTH	THICKNESS	WEIGHT
102-					
-696	S8-E15/20-30cm	118	71	13	102.0
-697	"	75	65	19	106.6
-698	"	64	47	10	31.9
-699	"	39	22	6	6.2
-773	S10-E12/40-50cm	60	44	9	27.6
-812	S10-E12/80-90cm	82	68	12	72.7
-813	"	91	53	12	74.5
-814	"	59	51	12	40.6
-849	S10-E14/0-10cm	72	56	13	70.8
-898	S10-E15/10-20cm	95	87	19	177.0
-917	S10-E15/30-40cm	92	62	11	72.2
-918	"	82	50	13	69.0
-933	S14-E11/0-10cm	77	64	14	84.9
-950	S14-E11/30-40cm	111	83	16	154.9
-951	"	115	95	19	187.0
-952	"	72	48	16	58.6
-969	S14-E11/50-60cm	70	59	16	82.0
-970	"	90	72	18	111.8
-999	S14-E11/80-90cm	141	75	19	202.9
-1013	S14-E12/10-20cm	83	69	10	68.3
-1014	"	-	50	8	-
-1015	"	54	45	8	23.7
-1026	S14-E12/30-40cm	83	71	25	129.9
-1027	"	82	70	20	150.6
-1028	"	73	59	11	56.1
-1029	"	-	-	10	-
-1042	S14-E12/40-50cm	104	65	15	132.4
-1043	"	65	51	13	45.9
-1044	"	42	38	6	11.7
-1092	S14-E13/0-10cm	108	77	16	178.5
-1093	"	-	-	17	-
-1104	S14-E13/20-30cm	102	67	14	86.0
-1105	"	92	49	13	66.7
-1106	"	63	39	10	25.0
-1127	S14-E13/40-50cm	52	35	9	16.6
-1164	S14-E13/80-90cm	-	-	13	-
-1171	S14-E16/0-10cm	-	84	18	-
-1181	S14-E16/10-20cm	105	100	24	299.8
-1220	S14-E17/10-20cm	83	66	11	53.8
-1291	B-3/50-60cm	85	66	12	77.0

TABLE B-10

Proveniences and Dimensions of Cores and Core Tools
From CA-SHA-2611/H
(dimensions in mm and g)

CAT.#	PROVENIENCE	LENGTH	WIDTH	THICKNESS	WEIGHT
102-					
-26*	N0-E16/10-20cm	63	51	33	113.5
-27	"	66	58	36	131.2
-30*	N0-E16/20-30cm	87	69	41	286.2
-31	"	59	51	23	89.6
-38*	N0-E16/30-40cm	78	65	31	150.4
-39	"	90	69	32	211.0
-40	"	77	49	36	133.9
-41*	"	42	42	32	77.2
-42	"	111	73	37	371.4
-46	N0-E16/40-50cm	103	64	49	287.2
-54*	S1-E15/10-20cm	73	50	38	100.4
-102*	S3-E16/30-40cm	96	74	52	545.6
-108*	S3-E16/50-60cm	54	40	22	51.3
-117*	S5-E15/10-20cm	119	89	59	586.8
-122*	S5-E15/20-30cm	106	72	54	505.3
-123	"	58	44	32	74.0
-132*	S5-E15/30-40cm	71	45	32	145.0
-141*	S5-E15/40-50cm	79	48	31	130-9
-176*	S7-E16/10-20cm	78	58	30	127.0
-182*	S7-E16/20-30cm	88	64	25	153.9
-193*	S7-E16/30-40cm	75	55	30	111.4
-194*	"	65	55	24	80.4
-197*	"	74	57	38	186.9
-198*	"	85	55	45	196.8
-212*	S7-E16/50-60cm	67	50	46	148.9
-238	S8-E14/20-30cm	52	49	29	64.8
-239	"	32	30	23	21.0
-240*	"	100	64	38	220.1
-248*	S8-E14/30-40cm	107	78	52	684.4
-250	"	50	35	32	69.0
-251*	"	90	54	30	213.3
-301*	S9-E15/10-20cm	91	54	40	308.2
-310*	S9-E15/20-30cm	82	66	28	138.9
-316*	"	76	38	36	95.6

continued

TABLE B-10, continued

Proveniences and Dimensions of Cores and Core Tools
From CA-SHA-2611/H
(dimensions in mm and g)

CAT.#	PROVENIENCE	LENGTH	WIDTH	THICKNESS	WEIGHT
102-					
-328*	S9-E15/40-50cm	82	82	48	498.2
-329	"	85	67	67	482.2
-330*	"	80	66	32	180.0
-331*	"	67	50	30	95.0
-344*	S9-E17/0-10cm	75	60	29	138.4
-353*	S9-E17/10-20cm	72	60	29	98.2
-364*	S9-E17/30-40cm	63	57	53	208.6
-381*	S14-E8/0-10cm	80	55	20	128.7
-382	"	54	52	22	128.7
-419*	S14-E8/70-80cm	127	95	56	48.8
-425*	S14-E8/80-90cm	102	56	33	137.1
-437*	S14-E8/90-100cm	93	76	60	484.9
-438	"	68	51	39	156.5
-439	"	52	41	32	69.5
-446*	S14/E8/100-110cm	88	70	43	337.5
-456	S14-E9/0-10cm	57	44	37	90.0
-489*	S14-E9/70-80cm	74	55	36	164.8
-498*	S14-E9/80-90cm	72	66	44	237.6
-499*	"	49	42	35	81.4
-500*	"	52	41	24	73.8
-528*	B-1/20-30cm	92	80	33	232.8
-529*	"	86	72	34	234.2
-530*	"	58	45	30	98.9
-536*	B-1/30-40cm	101	77	55	431.6
-540	B-1/40-50cm	79	74	36	187.2
-541	"	62	55	30	106.7
-561*	B-1/80-90cm	87	70	69	657.7
-562*	"	62	47	24	88.2
-563	"	66	54	32	104.3
-569	B-1/90-100cm	56	53	41	105.3
-594*	B-2/20-30cm	61	59	30	105.0
-615	B-2/60-70cm	140	99	90	1618.3
-628*	B-2/80-90cm	91	85	36	321.8

TABLE B-10, continued

Proveniences and Dimensions of Cores and Core Tools
From CA-SHA-2611/H
(dimensions in mm and g)

CAT.#	PROVENIENCE	LENGTH	WIDTH	THICKNESS	WEIGHT
102-					
-700*	S8-E15/20-30cm	71	53	49	164.9
-701*	"	58	57	26	90.6
-702*	"	66	32	30	81.3
-703	"	42	42	33	55.8
-735*	S8-E15/50-60cm	82	56	45	118.8
-736	"	58	48	28	85.3
-791	S10-E12/60-70cm	50	45	28	69.8
-815*	S10-E12/80-90cm	104	64	47	467.3
-816*	"	89	66	58	429.8
-837*	S10-E12/90-100cm	82	51	49	190.8
-839	"	78	35	33	98.6
-850*	S10-E14/0-10cm	64	48	37	96.6
-874*	S10-E14/30-40cm	79	78	46	364.3
-875	"	100	67	31	310.6
-919*	S10-E15/30-40cm	76	65	41	203.1
-953*	S14-E11/30-40cm	75	58	29	129.4
-959*	S14-E11/40-50cm	51	49	31	85.3
-960*	"	63	42	38	63.6
-971*	S14-E11/50-60cm	64	62	25	159.5
-972*	"	71	54	29	127.4
-973	"	56	52	46	146.7
-979*	S14-E11/60-70cm	65	57	23	87.3
-980	"	60	43	25	59.0
-990*	S14-E11/70-80cm	-	70	30	-
-991	"	51	29	29	55.1
-1000*	S14-E11/80-90cm	97	61	48	335.7
-1001*	"	89	80	30	299.8
-1019	S14-E12/20-30cm	63	59	35	119.5
-1030	S14-E12/30-40cm	69	53	32	118.0
-1031*	"	67	56	40	189.4
-1032	"	77	48	27	132.4
-1033*	"	67	62	36	168.9

continued

TABLE B-10, continued

Proveniences and Dimensions of Cores and Core Tools
From CA-SHA-2611/H
(dimensions in mm and g)

CAT.#	PROVENIENCE	LENGTH	WIDTH	THICKNESS	WEIGHT
102-					
-1045	S14-E12/40-50cm	100	86	63	648.9
-1046*	"	96	83	40	369.9
-1047	"	99	80	50	444.5
-1048*	"	74	60	37	207.5
-1049*	"	76	67	29	150.1
-1050	"	60	48	23	70.7
-1069*	S14-E12/60-70cm	82	56	51	264.5
-1070*	"	92	45	22	118.8
-1071	"	59	44	33	103.4
-1072*	"	84	54	25	129.0
-1082*	S14-E12/70-80cm	50	42	24	41.8
-1100	S14-E13/10-20cm	63	34	33	78.9
-1107	S14-E13/20-30cm	107	90	75	840.7
-1108*	"	86	80	51	298.7
-1109	"	84	54	40	269.3
-1110	"	52	47	31	72.8
-1118	S14-E13/30-40cm	89	78	62	431.6
-1119*	"	83	74	38	221.8
-1120	"	77	56	26	111.1
-1128*	S14-E13/40-50cm	89	46	42	196.9
-1129	"	75	51	39	170.8
-1130*	"	46	43	28	56.4
-1142	S14-E13/50-60cm	87	47	26	142.8
-1143*	"	69	48	26	90.9
-1151*	S14-E13/60-70cm	96	77	59	610.3
-1227	S14-E17/20-30cm	111	81	59	540.2
-1128	"	88	74	44	279.8
-1229	"	49	47	20	41.6
-1237*	S14-E17/30-40cm	57	48	34	71.1
-1268*	B-3/0-10cm	49	36	25	39.0
-1277*	B-3/20-30cm	102	78	46	565.6
-1285	B-3/40-50cm	56	50	24	66.0
-1292	B-3/50-60cm	62	45	36	75.2

TABLE B-11

Proveniences and Dimensions of Notched-Pebble Net-Weights
From CA-SHA-2611/H
(dimensions in mm and g)

CAT.#	PROVENIENCE	LENGTH	WIDTH	THICKNESS	WEIGHT
102-					
-124	S5-E15/20-30cm	92	85	20	248.4
-241	S8-E14/20-30cm	-	108	23	-
-579	B-2/0-10cm	46	42	22	58.6
-648	surface	54	38	18	49.7
-909	S10-E15/20-30cm	67	58	20	99.8
-1036	S14-E12/30-40cm	-	50	16	-
-1094	S14-E13/0-10cm	-	39	12	-

TABLE B-12

Proveniences and Dimensions of Hammerstones
From CA-SHA-2611/H
(dimensions in mm and g)

CAT.#	PROVENIENCE	LENGTH	WIDTH	THICKNESS	WEIGHT
102-					
-5	surface	135	54	37	412.3
-47	N0-E16/40-50cm	-	82	46	-
-60	S1-E15/20-30cm	87	79	47	462.3
-61	"	89	58	48	323.9
-94	S3-E16/30-40cm	-	55	35	-
-200	S7-E16/30-40cm	46	44	37	-
-317	S9-E15/20-30cm	-	30	9	-
-345	S9-E17/0-10cm	-	44	37	-
-365	S9-E17/30-40cm	68	55	32	104.0
-366	"	91	47	17	100.0
-388	S14-E8/10-20cm	134	108	75	1190.3
-392	S14-E8/20-30cm	100	57	38	293.1
-426	S14-E8/80-90cm	85	64	33	253.1
-457	S14-E9/0-10cm	140	96	30	622.8
-501	S14-E9/80-90cm	107	63	46	404.1
-542	B-1/40-50cm	-	80	26	-
-564	B-1/80-90cm	97	74	40	418.5
-576	B-1/110-120	49	46	33	109.3
-611	B-2/50-60cm	90	40	32	184.2
-630	B-2/80-90cm	75	66	35	266.8
-716	S8-E15/30-40cm	96	63	65	412.5
-717	"	120	79	28	361.1
-748	S10-E12/0-10cm	101	30	23	89.4
-793	S10-E12/60-70cm	-	-	31	-
-822	S10-E12/80-90cm	81	59	48	315.8
-823	"	81	69	20	182.3
-824	"	105	-	-	-
-858	S10-E14/10-20cm	-	30	17	-
-876	S10-E14/30-40cm	120	66	46	560.9
-899	S10-E15/10-20cm	74	66	20	68.0
-908	S10-E15/20-30cm	128	94	94	1607.3
-981	S14-E11/60-70cm	-	91	68	-
-1051	S14-E12/40-50cm	81	61	34	188.2
-1060	S14-E12/50-60cm	81	52	42	225.4
-1073	S14-E12/60-70cm	86	67	44	365.6
-1074	"	-	56	36	-
-1111	S14-E13/20-30cm	73	50	40	210.4
-1144	S14-E13/50-60cm	108	50	35	283.8
-1145	"	48	47	26	73.7
-1183	S14-E16/10-20cm	49	40	33	90.0
-1195	S14-E16/30-40cm	50	45	39	116.9
-1230	S14-E17/20-30cm	121	72	58	720.5
-1279	B-3/20-30cm	85	71	44	366.9
-1298	B-3/60-70cm	-	-	48	-

TABLE B-13

Proveniences and Dimensions of Manos
From CA-SHA-2611/H
(dimensions in mm and g)

CAT.#	PROVENIENCE	LENGTH	WIDTH	THICKNESS	WEIGHT
102-					
-1	surface	109	90	50	962.8
-2	surface	118	86	59	1051.6
-118	S5-E15/10-20cm	(141)	(125)	57	-
-125	S5-E15/20-30cm	123	108	48	-
-157	S5-E15/60-70cm	114	108	51	971.0
-165	S5-E15/80-90cm	107	84	51	792.3
-324	S9-E15/30-40cm	133	101	46	1001.3
-332	S9-E15/40-50cm	105	90	52	802.0
-333	"	125	102	73	1463.0
-367	S9-E17/30-40cm	-	100	54	-
-629	B-2/80-90cm	-	80	56	-
-635	B-2/90-100cm	124	96	61	1017.3
-674	S7-E15/50-60cm	112	98	60	1110.5
-675	"	-	104	38	-
-713	S8-E15/30-40cm	144	112	63	1592.2
-714	"	123	95	61	1095.4
-817	S10-E12/80-90cm	116	111	46	
-818	"	98	87	67	1070.8
-819	"	107	95	56	814.3
-820	"	105	87	45	754.0
-821	"	99	77	76	903.6
-840	S10-E12/90-100cm	-	87	41	-
-907	S10-E15/20-30cm	121	101	59	1187.3
-974	S14-E11/50-60cm	88	80	42	436.8
-982	S14-E11/60-70cm	85	64	31	270.5
-1034	S14-E12/30-40cm	146	105	61	1026.9
-1035	"	(89)	75	48	-
-1182	S14-E16/10-20cm	107	98	-	-
-1245	S14-E17/40-50cm	79	68	-	-
-1278	B-3/20-30cm	-	-	-	-

( ) estimated value

TABLE B-14

Proveniences and Dimensions of Pestles
From CA-SHA-2611/H
(dimensions in mm and g)

CAT.#	PROVENIENCE	LENGTH	WIDTH	THICKNESS	WEIGHT
102-					
-4	surface	-	60	60	-
-398	S14-E8/30-40cm	-	-	-	-
-547	B-1/50-60cm	176	68	60	1171.2
-649	surface	177	83	66	1710.6
-792	S10-E12/20-30cm	160	54	53	707.5

TABLE B-15

Proveniences and Dimensions of Millingstones
From CA-SHA-2611/H
(dimensions in mm and kg)

CAT.#	PROVENIENCE	LENGTH	WIDTH	THICKNESS	WEIGHT
102-					
-3	surface	-	(230)	77	-
-184	S7-E16/20-30cm	-	-	54	-
-199	S7-E16/30-40cm	232	146	82	3.74
-252	S8-E14/30-40cm	-	195	118	-
-253	"	180+	-	56	-
-254	"	-	-	45	-
-368	"	-	-	73	-
-502	S14-E9/80-90cm	-	-	42	-
-537	B-1/30-40cm	-	-	96	-
-715	S8-E15/30-40cm	320	203	130	9.86
-747	S10-E12/0-10cm	-	-	92	-

TABLE B-16

Proveniences and Dimensions of Incised Stone Artifacts
From CA-SHA-2611/H
(dimensions in mm and g)

CAT.#	PROVENIENCE	LENGTH	WIDTH	THICKNESS	WEIGHT
102-					
-269	S8-E14/40-50cm	-	-	-	-
-334	S9-E15/40-50cm	82	40	20	115.3
-445	S14-E8/100-110cm	74	19	10	21.7
-669	S7-E15/40-50cm	39	18	6	4.7
-704	S8-E15/20-30cm	33	9	6	2.0
-825	S10-E12/80-90cm	47	24	11	16.2
-866	S10-E14/20-30cm	56	49	9	27.2
-983	S14-E11/60-70cm	81	28	10	38.6
-1002	S14-E11/80-90cm	-	21	7	-
-1083	S14-E12/70-80cm	101	36	19	67.0
-1131	S14-E13/40-50cm	56	20	11	21.0
-1231	S14-E17/20-10cm	-	-	2	-
-1232	"	39	13	4	3.3